

FINAL

---

**ENVIRONMENTAL ASSESSMENT  
FOR ECOSYSTEM RESTORATION  
MASTERPLAN IMPLEMENTATION  
MACDILL AIR FORCE BASE, FLORIDA**

---

HEADQUARTERS AIR MOBILITY COMMAND



MAY 2013

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE <b>MAY 2013</b>		2. REPORT TYPE		3. DATES COVERED <b>00-00-2013 to 00-00-2013</b>	
4. TITLE AND SUBTITLE <b>Final Environmental Assessment for Ecosystem Restoration Masterplan Implementation at MacDill Air Force Base, Florida</b>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>AMEC Environment &amp; Infrastructure, Inc, 404 SW 140th Terrace, Newberry, FL, 32669</b>				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>289</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

**FINDING OF NO SIGNIFICANT IMPACT  
AND  
FINDING OF NO PRACTICABLE ALTERNATIVE  
ECOSYSTEM RESTORATION MASTERPLAN IMPLEMENTATION  
MACDILL AIR FORCE BASE, FLORIDA**

**Agency:** United States Air Force (USAF), Headquarters, Air Mobility Command

**Background:** Pursuant to the President's Council on Environmental Quality regulations, Title 40 Code of Federal Regulations Parts 1500-1508, as they implement the requirements of the National Environment Policy Act (NEPA) of 1969, 42 U.S. Code § 4321, et seq., and the Air Force Environmental Impact Analysis Process, as promulgated in 32 CFR Part 989, the USAF conducted an assessment of the potential environmental consequences associated with implementation of the following Proposed Action: Implementation of the Ecosystem Restoration Masterplan (ERM). The attached Environmental Assessment (EA) considered all potential impacts of the proposed action, both as solitary actions and in conjunction with other proposed activities.

**Proposed Action:** The Proposed Action is intended to restore and enhance the remaining natural estuarine ecosystem present throughout a significant portion of the southern Interbay Peninsula within MacDill AFB. The Proposed Action involves a multi-phase, multi-year mangrove wetland restoration program that would restore the natural hydrology and enhance and create wildlife habitat at the Base. The Proposed Action – which incorporates the ERM by reference – outlines 25 individual multi-phase, multi-year projects within the project area, each designed for independent implementation while improving the overall function of the ecosystem. The individual projects are meant to work synergistically with one another to provide a greater ecological improvement than each project could be expected to yield individually. This long-term comprehensive approach allows for adjustments to be made from project to project as determined to be in the best interest of the goals of the ERM.

**Alternatives:** Given the site-specific design constraints of the Proposed Action, no other action alternatives were developed or considered for implementation of the ERM on-base. One potential alternative identified during the planning process included purchase of wetland mitigation credits from a permitted mitigation bank within the Tampa Bay/ Anclote River Watershed. However, this alternative was eliminated from further consideration as it could not meet the purpose and need of the Proposed Action or satisfy all of the goals established in the selection standards.

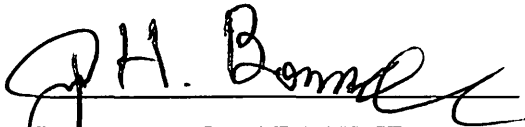
**Florida Coastal Zone Management:** In accordance with the federal Coastal Zone Management Act (CZMA) and the Florida CZMA, this federal action must be consistent “to the maximum extent practicable” with the Florida Coastal Management Program (CMP). Appendix A of the EA contains the Air Force’s Consistency Statement and finds that the conceptual Proposed Action and

alternative plans presented in the EA are consistent with Florida's CMP. In accordance with Florida statutes, the Air Force submitted a copy of the attached EA to the State of Florida so that they could perform a coastal zone consistency evaluation. The State of Florida determined that the Proposed Action is consistent with the Florida CMP.

**FINDING OF NO SIGNIFICANT IMPACT:** Based upon my review of the facts and analyses contained in the attached EA, I conclude that implementation of the Proposed Action will not have a significant environmental impact, either by itself or cumulatively with other projects at MacDill AFB. Accordingly, the requirements of NEPA and the regulations promulgated by the Council on Environmental Quality and the Air Force are fulfilled and an Environmental Impact Statement is not required. The *Tampa Tribune* published a Notice of Availability on 17 June 2012 and again on 25 March 2013. Copies of agency coordination letters, project correspondence, and comments received from the agencies are included in Appendix B of the EA. No public comments were received.

**FINDING OF NO PRACTICABLE ALTERNATIVE:** Pursuant to Executive Orders 11990 and 11988, the authority delegated in Headquarters Air Force Mission Directive 1-18, and in Air Mobility Command Vice Commander (AMC/CV) Redlegation of Environmental Authorities letter dated 14 January 2005, and taking into consideration the findings of the attached EA, I find that there is no practicable alternative to the Proposed Action occurring in a floodplain and wetland areas. All 25 proposed restoration projects are located within wetland areas with limited upland components and are entirely located within the 100-year floodplain. The Proposed Action includes all practicable measures to minimize harm to the environment. Based upon the environmental constraints and the nature of the habitat restoration projects, there are no other available areas located on MacDill AFB that would satisfy the objectives of the Proposed Action. The Proposed Action, as designed, includes all practicable measures to minimize harm to the floodplain and wetlands. The Air Force has sent all required notices to federal agencies, single points of contact, the State of Florida, local government representatives, and the local news media.

The signing of this combined Finding of No Significant Impact and Finding of No Practicable Alternative completes the Environmental Impact Analysis Process under USAF regulations.

  
JOHN H. BONAPART, JR.  
SES, DAFC

Director of Installations and Mission Support

4 SEP 13  
DATE



## ACRONYMS

AFB	Air Force Base	FY	Fiscal Year
AGL	above ground level	GHG	Greenhouse Gas Emissions
AICUZ	Air Installation Compatible Use Zone	HAFMD	Headquarters Air Force Mission Directive
AMC	Air Mobility Command	HSWA	Hazardous and Solid Waste
AMC/CV	Air Mobility Command Vice Commander	ICRMP	Integrated Cultural Resources Management Plan
AMW	Air Mobility Wing	INRMP	Integrated Natural Resource Management Plan
APZ	Accident Potential Zone	LUC	Land Use Control
AQCR	Air Quality Control Region	MBTA	Migratory Bird Treaty Act
ARG	Aerial Refueling Group	mgd	million gallons per day
ARW	Air Refueling Wing	MNA	Monitored Natural Attenuation
BASH	Bird-Aircraft Strike Hazard	MSL	mean sea level
BMP	Best Management Practice	NEPA	National Environmental Policy Act
CEQ	Council on Environmental Quality	NFA	No Further Action
CERCLA	Comprehensive Environmental Response Compensation and Liability Act	NFRAP	No Further Response Action
CES/CEV	Civil Engineering Environmental Flight	NPDES	National Pollutant Discharge Elimination System
CFR	Code of Federal Regulations	NRCS	Natural Resource Conservation Service
CINC	Commander in Chief	NWI	National Wetlands Inventory
CMP	Coastal Management Program	OSHA	Occupational Safety and Health Administration
CWA	Clean Water Act	PAH	polynuclear aromatic hydrocarbon
CZ	Clear Zone	PCB	polychlorinated biphenyl
CZMA	Coastal Zone Management Act	RCRA	Resource Conservation and Recovery Act
DFSP	Defense Fuel Supply Point	RFI	RCRA Facility Investigation
DNL	day-night average sound level	RHA	Rivers and Harbors Act
DoD	Department of Defense	RIP	Remedy in Place
EA	Environmental Assessment	SARA	Superfund Amendments and Reauthorization Act
EIAP	Environmental Impact Analysis Process	SDZ	Surface Danger Zone
EO	Executive Order	SHPO	State Historic Preservation Office
EOD	Explosive Ordnance Disposal	SPCC	Spill Prevention Control and Countermeasures
ERM	Environmental Restoration Conceptual Masterplan	SPGP	State Programmatic General Permit
ERP	Environmental Restoration Program	SWFWMD	Southwest Florida Water Management District
ESA	Endangered Species Act	SWMU	Solid Waste Management Unit
ESQD	explosive safety quantity-distance	U.S.	United States
FAA	Federal Aviation Administration	USACE	U.S. Army Corps of Engineers
FDEP	Florida Department of Environmental Protection	USAF	U.S. Air Force
FEMA	Federal Emergency Management Agency	USC	U.S. Code
FICUN	Federal Interagency Committee on Urban Noise	USCENTCOM	U.S. Central Command
FLUCFCS	Florida Land Use, Cover and Forms Classification System	USEPA	U.S. Environmental Protection Agency
FONPA	Finding of No Practicable Alternative	USFWS	U.S. Fish and Wildlife Service
FONSI	Finding of No Significant Impact	USSOCOM	U.S. Special Operations Command
FWC	Florida Fish & Wildlife Conservation Commission	UST	underground storage tank
		WWTP	wastewater treatment plant

**ENVIRONMENTAL ASSESSMENT  
FOR ECOSYSTEM RESTORATION MASTERPLAN IMPLEMENTATION  
MACDILL AIR FORCE BASE, FLORIDA**

**CONTENTS**

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
<b>ACRONYMS..... inside front cover</b>		
<b>SECTION 1 PURPOSE AND NEED FOR ACTION ..... 1-1</b>		
1.1	INTRODUCTION.....	1-1
1.2	MISSION AND BACKGROUND .....	1-1
1.3	LOCATION OF THE PROPOSED ACTION.....	1-2
1.4	PURPOSE AND NEED FOR THE PROPOSED ACTION.....	1-2
1.5	COASTAL ZONE CONSISTENCY DETERMINATION .....	1-5
<b>SECTION 2 PROPOSED ACTION AND ALTERNATIVES ..... 2-1</b>		
2.1	SELECTION STANDARDS .....	2-1
2.2	PROJECT AREA HISTORY .....	2-1
2.3	DETAILED DESCRIPTION OF THE PROPOSED ACTION.....	2-2
2.3.1	Mosquito Ditch Restoration Sites.....	2-6
2.3.2	Canal Spoil Mound Restoration .....	2-7
2.3.3	Best Management Practices and Construction Access.....	2-9
2.3.4	Project Scheduling and Coordination.....	2-10
2.4	ALTERNATIVES CONSIDERED BUT ELIMINATED .....	2-10
2.5	NO-ACTION ALTERNATIVE.....	2-11
<b>SECTION 3 AFFECTED ENVIRONMENT ..... 3-1</b>		
3.1	ISSUES ELIMINATED FROM FURTHER ANALYSIS .....	3-1
3.1.1	Land Use .....	3-1
3.1.2	Noise.....	3-1
3.1.3	Transportation.....	3-2
3.1.4	Airspace and Airfield Operations .....	3-3
3.1.5	Hazardous Materials and Waste .....	3-3
3.1.6	Environmental Justice and Protection of Children.....	3-4
3.1.7	Socioeconomics .....	3-5
3.1.8	Cultural Resources .....	3-5
3.1.9	Visual Resources.....	3-6
3.2	BIOLOGICAL RESOURCES .....	3-6
3.2.1	Vegetation.....	3-6
3.2.2	Wildlife.....	3-9
3.2.3	Sensitive Species .....	3-11

## CONTENTS (Continued)

<u>NUMBER</u>	<u>TITLE</u>	<u>PAGE</u>
3.2.4	Wetlands .....	3-13
3.3	WATER RESOURCES .....	3-14
3.3.1	Surface Water .....	3-14
3.3.2	Groundwater .....	3-15
3.3.3	Floodplains .....	3-16
3.4	ENVIRONMENTAL RESTORATION PROGRAM .....	3-18
3.5	GEOLOGICAL RESOURCES.....	3-23
3.5.1	Topography .....	3-23
3.5.2	Geology .....	3-23
3.5.3	Soils.....	3-24
3.6	SAFETY .....	3-24
3.6.1	Occupational Health and Safety .....	3-24
3.6.2	Bird-Aircraft Strike Hazard.....	3-25
3.6.3	Clear Zones.....	3-26
3.6.4	Explosives Safety .....	3-26
3.7	AIR QUALITY .....	3-27
3.7.1	Climate .....	3-27
3.7.2	Baseline Air Emissions.....	3-28
3.7.3	Sensitive Receptors.....	3-29
<b>SECTION 4 ENVIRONMENTAL CONSEQUENCES .....</b>		<b>4-1</b>
4.1	BIOLOGICAL RESOURCES .....	4-1
4.1.1	Proposed Action .....	4-1
4.1.2	No-Action Alternative .....	4-10
4.2	WATER RESOURCES .....	4-11
4.2.1	Proposed Action .....	4-11
4.2.2	No-Action Alternative .....	4-13
4.3	ENVIRONMENTAL RESTORATION PROGRAM .....	4-13
4.3.1	Proposed Action .....	4-13
4.3.2	No-Action Alternative .....	4-17
4.4	GEOLOGICAL RESOURCES.....	4-18
4.4.1	Proposed Action .....	4-18
4.4.2	No-Action Alternative .....	4-19
4.5	SAFETY .....	4-19
4.5.1	Proposed Action .....	4-19
4.5.2	No-Action Alternative .....	4-21
4.6	AIR QUALITY .....	4-22
4.6.1	Proposed Action .....	4-22
4.6.2	No Action Alternative.....	4-26
4.7	INDIRECT AND CUMULATIVE IMPACTS .....	4-26
4.7.1	Biological Resources.....	4-26

## CONTENTS (Continued)

<u>NUMBER</u>	<u>TITLE</u>	<u>PAGE</u>
4.7.2	Water Resources .....	4-27
4.7.3	Environmental Restoration Program.....	4-27
4.7.4	Geology .....	4-28
4.7.5	Safety .....	4-28
4.7.6	Summary of Cumulative Impacts .....	4-29
4.8	COMPARISON OF THE ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION AND ALTERNATIVES.....	4-29
4.9	OTHER NEPA CONSIDERATIONS .....	4-30
4.9.1	Unavoidable Adverse Impacts .....	4-30
4.9.2	Relationship between Short-Term Uses and Enhancement of Long-Term Productivity .....	4-30
4.9.3	Irreversible and Irretrievable Commitment of Resources .....	4-30
<b>SECTION 5 PERSONS CONTACTED.....</b>		<b>5-1</b>
<b>SECTION 6 LIST OF PREPARERS .....</b>		<b>6-1</b>
<b>SECTION 7 REFERENCES .....</b>		<b>7-1</b>

## APPENDICES

A	Coastal Management Program Consistency Statement
B	Public Notice and Agency Coordination
C	Historic Aerials
D	Project Site Data Sheets
E	Wetland Permitting Packages for Sites 8 and 15
F	Standard Manatee Conditions for In-Water Work
G	Cumulative Project Lists
H	Soil Survey Information
I	Air Quality Calculations

## LIST OF FIGURES

<u>NUMBER</u>	<u>TITLE</u>	<u>PAGE</u>
Figure 1-1.	Regional Location Map, MacDill AFB.....	1-3
Figure 1-2.	MacDill AFB .....	1-4
Figure 2-1.	Proposed Action at MacDill AFB .....	2-3
Figure 3-1.	Biological Resources in the Proposed Project Vicinity .....	3-7
Figure 3-2.	Hydrologic Resources in the Proposed Project Vicinity .....	3-17
Figure 3-3.	Environmental Constraints in the Proposed Project Vicinity .....	3-19
Figure 4-1.	Hydrologic Resources and Proposed Project Locations .....	4-6
Figure 4-2.	Environmental Constraints and Proposed Project Location .....	4-14

## LIST OF TABLES

<u>NUMBER</u>	<u>TITLE</u>	<u>PAGE</u>
Table 2-1.	Restoration Sites at MacDill AFB .....	2-5
Table 3-1.	Summary of Protected Species Identified at MacDill AFB.....	3-12
Table 3-2.	Summary of ERP Sites within the Project Area .....	3-20
Table 3-3.	2008 Baseline Emissions Inventory for Hillsborough County, Florida .....	3-28
Table 4-1.	Summary of ERP Sites within the Project Area .....	4-15
Table 4-2.	Proposed Action Air Emissions at MacDill AFB .....	4-24
Table 4-3.	Comparison of Environmental Consequences.....	4-29

## **SECTION 1**

### **PURPOSE AND NEED FOR ACTION**

#### **1.1 INTRODUCTION**

This Environmental Assessment (EA) identifies, describes, and evaluates potential environmental impacts associated with the implementation of the Ecosystem Restoration Conceptual Masterplan at MacDill Air Force Base (AFB) (U.S. Air Force [USAF] 2007) including proposed mangrove wetland restoration activities. The Proposed Action involves a multi-phase, multi-year wetland and upland restoration program described in the Ecosystem Restoration Conceptual Masterplan that would restore the natural hydrology and enhance and create wildlife habitat at the Base. This EA summarizes the Proposed Action, alternatives considered but eliminated from further consideration, and the No Action Alternative.

#### **1.2 MISSION AND BACKGROUND**

First established in 1939 as an Army airfield, MacDill AFB became an Air Force Base in 1948. The base has undergone several mission changes and has played a vital role in training and strategic defense. Since 1996, MacDill AFB has been host to the 43rd Aerial Refueling Group (ARG), which joined the 6th Air Base Wing to form the 6th Air Refueling Wing (6 ARW). With the addition of the Commander in Chief (CINC) Support mission in January 2001, the 6 ARW was redesignated the 6th Air Mobility Wing (6 AMW). The 6 AMW is the host unit at MacDill AFB and is a subordinate unit to Air Mobility Command (AMC), headquartered at Scott AFB, Illinois. The 6 AMW's overall mission is to generate and execute air refueling, airlift, and contingency response capabilities while providing support for joint, coalition and interagency partners including Headquarters U.S. Central Command (USCENTCOM) and Headquarters U.S. Special Operations Command (USSOCOM), and 38 other mission partners that call MacDill AFB home. In addition, the base provides similar support to tenant agencies and the MacDill community, including over 116,000 retirees and their families. The organizational structure of 6 AMW consists primarily of a maintenance group, medical group, operations group, and mission support group.

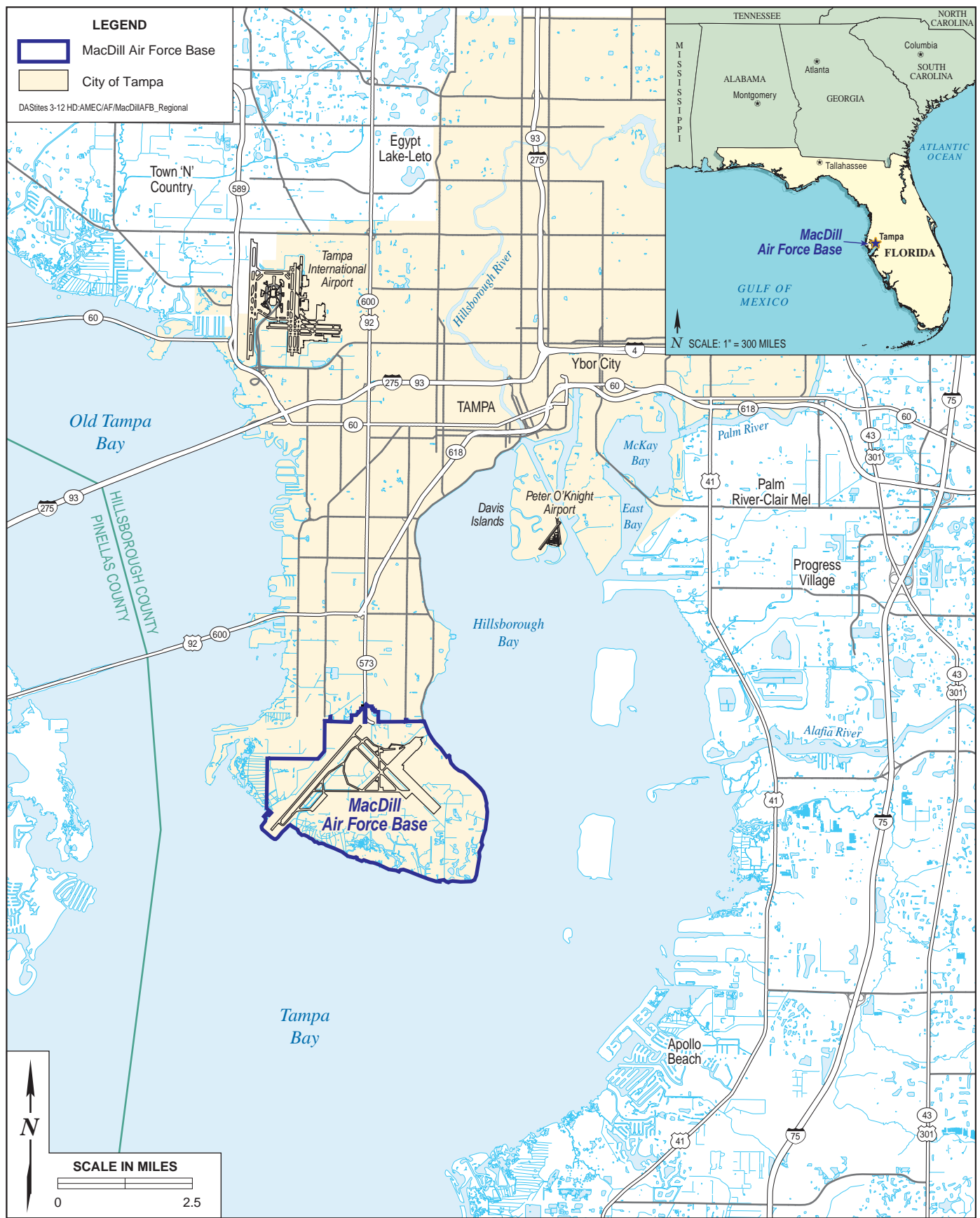
### **1.3 LOCATION OF THE PROPOSED ACTION**

The Proposed Action would take place at MacDill AFB, located in Tampa, Florida. The base occupies approximately 5,630 acres and is located in Hillsborough County adjacent to the City of Tampa, at the southern tip of the Interbay Peninsula (Figure 1-1 and Figure 1-2). The base elevation ranges from sea level to approximately 15 feet above mean sea level (MSL). Much of the base is less than five feet above MSL, and wetland areas are common, especially mangrove wetlands. The base is surrounded on three sides by Tampa Bay and Hillsborough Bay, and is bordered on the north by development within the City of Tampa. Land uses adjacent to the base are a mix of single-family residential, light commercial and industrial designations. The proposed location of the mangrove wetland restoration program is within the southeastern corner of the Interbay Peninsula, at Gadsden Point. Figure 1-1 also depicts the general location map for the mangrove wetland restoration program within the base. Figure 1-2 is the specific location map for the mangrove wetland restoration program at MacDill AFB.

### **1.4 PURPOSE AND NEED FOR THE PROPOSED ACTION**

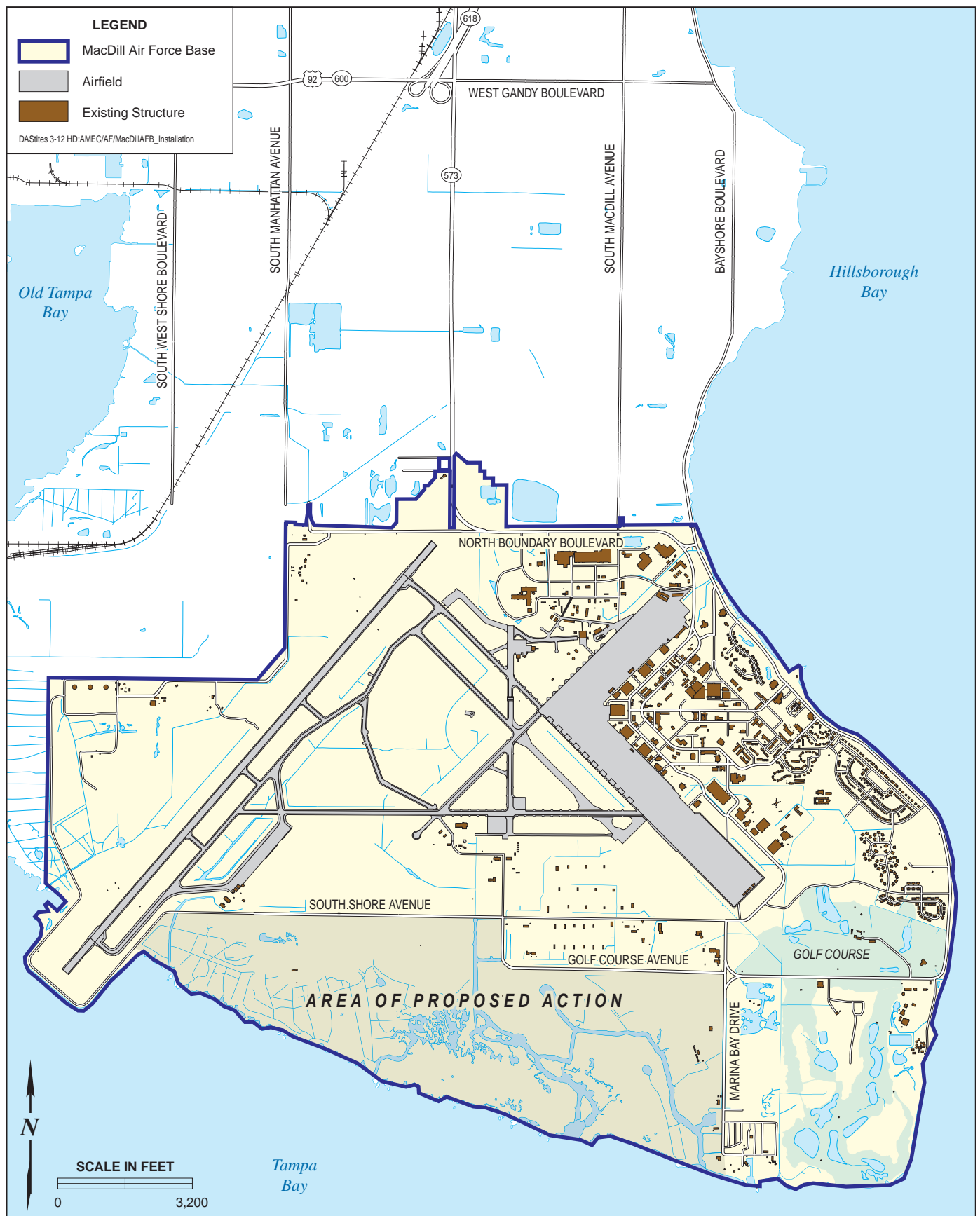
From the 1940's through the 1970's, the USAF accomplished excavation of drainage and mosquito control ditches within the perimeter of MacDill AFB in an effort to improve stormwater drainage and reduce mosquito populations. These ditches have substantially altered the natural hydrology once present throughout the southern portions of the Interbay Peninsula by modifying the natural exchange of fresh and salt waters, a crucial component to the health and productivity of an estuary. This channelization has eliminated the southward sheetflow of freshwater runoff across the area and has had a similar effect on tidal flooding, thus altering the hydrologic regime, especially in regards to salinity gradients. This alteration of hydrology, in turn, has impacted the vegetative communities of the area.

The purpose of the Proposed Action is the restoration and enhancement of the remaining natural estuarine ecosystem present throughout a significant portion



No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.





EA

## MacDill Air Force Base

FIGURE  
1-2

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

of the southern Interbay Peninsula within MacDill AFB. The Proposed Action would also improve water quality, increase community structure, expand habitat types and habitat values, and provide additional storm surge protection.

MacDill AFB has recognized the importance and need for returning these lands to their natural condition, and has made a commitment to the restoration of the natural resources on the base. The Ecosystem Restoration Conceptual Masterplan was designed in accordance with the MacDill Integrated Natural Resources Management Plan (USAF 2010) that supports the MacDill Air Force Installation Development Plan (USAF 2011).

As MacDill AFB grows and changes to meet its mission, anticipated future development elsewhere on the base could cause unavoidable impacts to the wetlands found there. Through the completion of wetland restoration projects analyzed in this EA MacDill AFB is not only returning the land to pre-disturbance conditions but is planning ahead. The completion of wetland restoration and enhancement projects would generate wetland mitigation credits which would be recorded and available for future use. If needed, recognized mitigation credits could be used to offset potential future wetlands impacts and could eliminate project delays associated with wetland permitting on future projects. The potential mitigation value associated with each restoration site has been incorporated into this EA.

## **1.5 COASTAL ZONE CONSISTENCY DETERMINATION**

The Federal Coastal Zone Management Act (CZMA) creates a state-Federal partnership to ensure the protection of coastal resources. The Federal CZMA requires each Federal agency activity within or outside the coastal zone, which affects any land or water use or natural resources of the coastal zone to be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of the Florida Coastal Management Program (CMP) of 1981. The Florida CZMA presumes that “direct Federal activities” will directly affect the coastal zone. According to the Florida CMP, “direct Federal activities” are those that “are conducted or supported by or on behalf of a Federal agency in the exercise of its statutory responsibilities, including development projects.”

The Federal CZMA requires Federal agencies carrying out activities subject to the Act to provide a “consistency determination” to the relevant state agency. The Federal regulations implementing the Act then require the state agency to inform the Federal agency of its agreement or disagreement with the Federal agency’s consistency determination. Therefore, the Proposed Action and Alternatives to the Proposed Action analyzed in this EA require the USAF to submit a consistency determination to the relevant Florida agency and a response from the State of Florida of either agreement or disagreement with that determination. The USAF’s Consistency Determination is contained in the Consistency Statement at Appendix A. This EA, including the USAF’s Consistency Statement was submitted to the Florida State Clearinghouse for a multi-agency review. The Florida Department of Environmental Protection assembled and reviewed the comments provided by the various state and county agencies and determined in a letter dated 9 August 2012 that the proposed project is consistent with the Florida Coastal Management Program (see Appendix B).

## SECTION 2

### PROPOSED ACTION AND ALTERNATIVES

#### 2.1 SELECTION STANDARDS

The selection standards focus on four important and complementary goals for the Proposed Action. First, the Proposed Action must help to improve water quality around MacDill AFB and throughout the bay. Second, the Proposed Action is intended to enhance and create wildlife habitat. As the habitat in the area is improved, there should be an increase in the usage of the area by wildlife. A third goal for the Proposed Action is to control and remove exotic/nuisance plant species. Finally, the Proposed Action must benefit MacDill AFB by providing the opportunity to earn wetland mitigation credits which may be used in the future to offset wetland impacts associated with base development (please see Section 1.4, *Purpose and Need for the Proposed Action*). Selecting a project that would meet these selection standards would also meet the MacDill AFB Integrated Natural Resource Management Plan objective to restore, enhance and protect the coastal ecosystem at MacDill AFB (U.S. Air Force [USAF] 2010).

#### 2.2 PROJECT AREA HISTORY

A review of historical aerial photographs clearly depicts the progression of disturbance to the area over the last 50 years (Appendix C). The 1938 photo shows the project area prior to its purchase by the Department of the Army with a few large drainage canals primarily in the upland areas. By 1948, aerial photography shows some ground disturbance and an apparent borrow pit near the runway on the west side, heavy ground disturbance on the east side of the runway, and limited mosquito ditching in the mangrove swamp. As depicted in the 1957 photo, the ditching expanded throughout the site and several impoundments were created near the runway. Between 1957 and 1976, extensive expansion of the drainage and mosquito ditching in the mangrove swamp occurred. The large canal to the east was dug with the spoil material deposited on the adjacent wetlands. Broad Creek was dredged and spoil banks created. Little disturbance occurred in the subsequent years but the damage was already extensive.

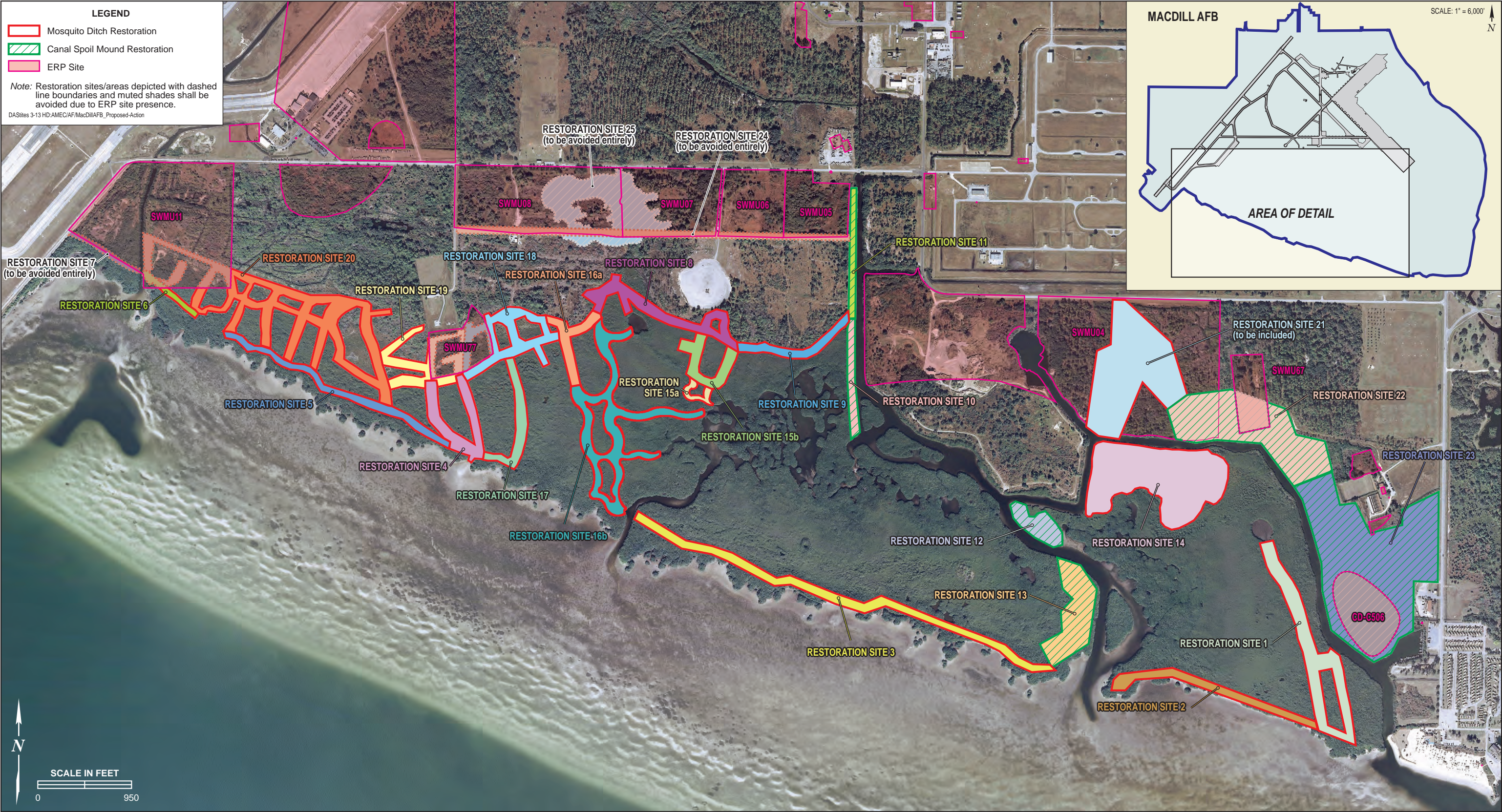
Spoil material from the mosquito ditching and canal dredging created pockets of upland habitat where mangrove and saltern ecosystems once flourished. These spoil mounds were subsequently invaded by nuisance and exotic plant species such as Brazilian pepper (*Schinus terebinthifolius*), Australian pine (*Casuarina equisetifolia*) and melaleuca (*Melaleuca quinquinervia*).

### **2.3 DETAILED DESCRIPTION OF THE PROPOSED ACTION**

The Proposed Action would consist of implementation of the Ecosystem Restoration Conceptual Masterplan (ERM) which includes 25 individual restoration sites within the project area, totaling approximately 217 acres. Figure 2-1 and Table 2-1 present the 25 individual restoration sites. The individual sites would work synergistically with one another to provide a greater ecological improvement than each could be expected to yield individually. This long-term comprehensive approach would allow for adjustments to be made from site to site as determined to be in the best interest of the goals of the ERM. However, a number of active Environmental Restoration Program (ERP) sites with contaminated soils and/or groundwater, solid debris, and potentially buried chemical ordnance are located in the general project area that would require several years for remediation before natural degradation would remove the contaminants (see Section 4.4, *Environmental Restoration Program*). Given potential concerns associated with these ERP sites, the Proposed Action would avoid all ecosystem restoration activity planned within ERP sites still considered active or under long-term investigation. Therefore, under the Proposed Action ecosystem restoration activities would be completely avoided at individual sites 7, 24, and 25 and would be partially avoided at individual sites 6, 18-20, 22, and 23 until potential contamination or safety concerns have been appropriately addressed and the respective ERP site have been closed (see Table 2-1).

In the event that future adjustments to proposed activities at individual restoration sites resulted in substantial changes from the activities proposed and analyzed in this Environmental Assessment, additional analysis and documentation would be required in order to ensure continued compliance with the National Environment Policy Act of 1969 and the Air Force Environmental Impact Analysis Process.





EA

Proposed Action at  
MacDill AFB

FIGURE  
2-1

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.



This page intentionally left blank.

**Table 2-1. Restoration Sites at MacDill AFB**

Restoration Site	Planned Size (acres)	ERP Site Avoidance (until closure)	Wetland Credit Potential	Restoration Type
1	9.44	--	Moderate	Mosquito Ditch
2	4.33	--	Moderate	Mosquito Ditch
3	9.02	--	Moderate	Mosquito Ditch
4	4.65	--	Low	Mosquito Ditch
5	4.49	--	Moderate	Mosquito Ditch
6	1.03	<i>0.3 acres avoided</i>	Moderate	Mosquito Ditch
7	0.84	<i>Completely avoided</i>	Moderate	Mosquito Ditch
8	5.70	--	Moderate	Mosquito Ditch
9	2.63	--	Moderate	Mosquito Ditch
10	1.96	--	High	Canal Spoil Mound
11	2.28	--	High	Canal Spoil Mound
12	2.80	--	Moderate	Canal Spoil Mound
13	7.17	--	Moderate	Canal Spoil Mound
14	19.12	--	Moderate	Mosquito Ditch
15	3.70	--	Low	Mosquito Ditch
16	13.75	--	Low	Mosquito Ditch
17	3.18	--	Moderate	Mosquito Ditch
18	6.85	<i>1.01 acres avoided</i>	Low	Mosquito Ditch
19	5.37	<i>1.18 acres avoided</i>	Low	Mosquito Ditch
20	18.24	<i>2.15 acres avoided</i>	Moderate	Mosquito Ditch
21	18.23	--	Moderate	Mosquito Ditch
22	17.69	<i>0.23 acres avoided</i>	Moderate	Canal Spoil Mound
23	35.89	<i>8.3 acres avoided</i>	Moderate	Canal Spoil Mound
24	6.43	<i>Completely avoided</i>	Moderate	Mosquito Ditch
25	12.62	<i>Completely avoided</i>	High	Canal Spoil Mound
<b>Total</b>	<b>217.44</b>			

Source: USAF 2007.



A variety of construction methods would be utilized to accomplish the goals of the ERM and implement the Proposed Action. Each method would be evaluated to balance project objectives and budget. Construction methods could include hydro-axe (also known as a 'hydro-mower', an articulated tractor with a mower/mulcher mounted on the front of the machine) clearing of exotic vegetation; the use of backhoes, front end loaders, bulldozers and dump trucks to grade and remove fill; hydro-blasting to spread fill; and hand clearing where necessary. Contractors and base personnel would provide labor. Specific labor and equipment needs would be addressed during planning and design for restoration at each site. Construction approaches would be selected for each site to minimize ecological impact on adjacent areas, provide the desired results of the project, and be economically feasible.

In general, restoration sites under the Proposed Action can be grouped into two categories based on restoration type – Mosquito Ditch Restoration and Canal Spoil Mound Restoration (refer to Table 2-1). These restoration types and associated construction activities are described below. Excerpts from the ERM providing information and a description of the proposed activities at all restoration sites can be found in Appendix D. As previously discussed, the 25 individual sites have been designed to work synergistically with one another to provide a greater ecological improvement than each could be expected to yield individually. However, the individual project sites from the ERM have been designed to function independently of each other. Consequently, the proposed activities at each restoration site could be implemented individually without depending on prior construction or completion of any other site.

### **2.3.1 Mosquito Ditch Restoration Sites**

The intent of proposed activities at the Mosquito Ditch Restoration Sites is to help to improve water quality around MacDill AFB and throughout the bay, enhance and create wildlife habitat, and control and remove exotic/nuisance plant species. In addition, the proposed restoration activities would provide the opportunity to earn wetland mitigation credits which may be used in the future to offset wetland impacts associated with base development.

Mosquito Ditch Restoration Sites represent 18 of the 25 total sites to be included under the Proposed Action. These include Restoration Sites 1 through 9, 14 through 21, and 24. With the exception of Restoration Site 14, the proposed restoration activities would include removal of the mosquito ditch spoil mounds throughout each site to help restore the natural sheet flow of tidal water through the area. In the case of Restoration Sites 8 and 9, removal of the mosquito ditch spoil mounds would help to restore the natural sheet flow of fresh water across the upland southward to the mangrove forest.

The preferred approach for removal of spoil mounds would include using the hydro-blasting construction approach. Using water from the mosquito ditches and a large portable pump set-up, each mound would be blasted with a concentrated stream of water to loosen and spread the soil material from the mound. Each mound would be reduced to an elevation that is, at a minimum, below the mean high tide level. Spoil material would be spread out around the mound in a 360-degree area and would partially fill the adjacent ditch, helping to restore the natural hydrologic regime. Exotic plants established on the spoil mounds, primarily Brazilian pepper, would be cleared from at each site by hand cutting and chipping on site. All resultant mulch and debris would be transported to an upland location. Revegetation would occur naturally in most areas through secondary succession; native vegetation would be planted in limited amounts where necessary and would include aquatic, emergent, and transitional species. Exotic plant species would then be excluded from re-establishing by the restored elevations below mean high tide and hydrologic regime.

Proposed activities at Restoration Site 14 would include the removal of exotic and nuisance plant species only, primarily Brazilian pepper and melaleuca. No spoil mound removal, excavation, or earthwork of any kind would be conducted.

### **2.3.2 Canal Spoil Mound Restoration**

The intent of proposed activities at the Canal Spoil Mound Restoration Sites is to help to improve water quality around MacDill AFB and throughout the bay, enhance and create wildlife habitat, and control and remove exotic/nuisance plant species. In addition, the proposed restoration activities would provide the

opportunity to earn wetland mitigation credits which may be used in the future to offset wetland impacts associated with base development.

Canal Spoil Mound Restoration Sites represent the remaining 7 sites to be analyzed under the Proposed Action, including Restoration Sites 10 through 13, 22, 23, and 25. Proposed restoration activities would include exotic plant removal and excavation of dredged spoil mounds to restore mangrove habitat and the natural sheet flow of tidal water through the area.

For all Canal Spoil Mound Restoration Sites, exotic plants would generally be cleared from the restoration sites by hand cutting and chipping on site. All resultant mulch and debris would be transported to an upland location. The use of mechanical equipment, such as a hydro-axe, to clear exotic vegetation may also be used if it is feasible for some of the restoration sites if site access and conditions allow for minimal secondary impacts to non-targeted plant species.

Required excavation would be accomplished using heavy equipment, such as a bobcat, backhoe, small track hoe, or crane with a clamshell bucket. Deep water around the boundaries of Restoration Sites 11 and 12 would require the use of a barge to transport equipment and personnel to the work area. Due to the size of the Restoration Sites 11 and 12, a crane may not be able to reach the entire spoil mound area from a barge. If the crane can be moved onto the upland spoil mound area it may be able to service the entire area; however, a small track hoe may be easier to move onto the upland mounded area in order to move excavated soils for the crane to reach. In addition, a portable conveyor belt system could also be used to move transfer excavated soils if feasible. The excavated fill from the spoil mounds would be transferred to a shallow draft barge in order to transport the spoil material to an upland location where it would be hauled by truck for stockpiling. The stockpile area for all excavated soils may vary depending on future availability of appropriate space but would be within the boundaries of the base. It is not currently expected that any fill would need to be removed from MacDill AFB.

### **2.3.3 Best Management Practices and Construction Access**

Implementation of the Proposed Action would include development of Best Management Practices (BMPs) for turbidity and erosion control for all restoration sites and project activities as typically required by permits issued by Federal, state and local resource agencies. Silt fencing and floating turbidity barriers would be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. In areas where trenching for silt fencing would be detrimental to tree roots, staked hay bales may be necessary. All measures would remain in place in good working order until soils have stabilized sufficiently, after which all control measures would be removed. Native vegetation would be planted when required and would include aquatic, emergent, and transitional species. Appropriate plant species which match the hydrologic conditions for the site would be selected for each restoration site to ensure the long term survivability of the plants.

Post construction maintenance and monitoring of the restored sites would play a crucial role in the success of the Proposed Action and is typically a standard condition of permits issued by Federal, state and local resource agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs would be identified during monitoring events and would be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

Temporary construction access routes would need to be constructed in some restoration sites for equipment access. These unimproved/unpaved routes would allow access to and future maintenance of the sites and would be kept to a minimum size and include appropriate erosion controls. By sequencing the projects properly, these access routes could be used for multiple sites thus reducing impacts and costs. The indicated predecessors of each restoration site take this into account as some sites may provide the only feasible access to others. For Restoration Sites 1, 2, 3, 5, 6, 12, 13, and 14, a small barge would be required to transport equipment and personnel to and from the sites.

### **2.3.4 Project Scheduling and Coordination**

The first two sites planned for implementation are Restoration Sites 8 and 15, which have already gone through initial design and permitting processes and are scheduled to be restored in Fiscal Year (FY) 2013 (see Appendix E). Other priority sites for the next five years include Restoration Sites 16 and 17, and 18. Restoration of each site included in the Proposed Action would require Federal, State, and County authorization prior to commencement.

Available funding would control the overall project sequence and duration. It is anticipated that completion of the Proposed Action in its entirety would take over ten years, based on the budgeting history of similar projects. Individual restoration sites have been designed to vary in size, complexity and construction costs, allowing planners to strategically choose projects based on needs and funding availability. As previously stated, the Proposed Action would avoid all ecosystem restoration activity planned within ERP sites still considered active or under long-term investigation. Activities proposed under the ERM in these areas have not been analyzed as part of the Proposed Action and further would not be conducted in the future until they are deemed safe for further ecological restoration, compatible with future potential land use controls, and after appropriate coordination and in close consultation with ERP personnel at MacDill AFB. In addition, portions of the Proposed Action would be located within the explosive ordnance safety arc for the Explosive Ordnance Disposal (EOD) range which would require close coordination and scheduling with EOD and safety personnel to avoid any potential safety issues. In the event that potentially contaminated soils or other safety hazards were discovered during restoration activities, all work would stop to allow appropriate personnel (ERP, EOD, safety, etc.) to characterize the material and/or safety concern and determine the appropriate response.

## **2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED**

Given the site-specific design constraints of the Proposed Action, no other action alternatives were developed or considered for implementation of the Ecosystem Restoration Masterplan on-base. One potential alternative identified during the planning process included purchase of wetland mitigation credits from a

permitted mitigation bank within the Tampa Bay/Anclote River Watershed. Mitigation banks simplify the wetland mitigation process for potential clients by purchasing tracts of land then 'banking' mitigation credit through the creation of new wetlands and restoration of degraded wetlands on the property. However, this alternative was eliminated from further consideration as it could not meet the purpose and need of the Proposed Action or satisfy all of the goals established in the selection standards.

## **2.5 NO-ACTION ALTERNATIVE**

Under the No Action Alternative, no ecosystem restoration activities would occur at MacDill AFB. If this alternative were to be implemented, there would be no improvements to hydrology or improvements to water and habitat quality. It would not enhance and create habitat. This alternative is not considered a viable alternative as it does not address ecosystem restoration priorities at MacDill AFB. However, it is included as a basis for comparison as required under Federal law.



## **SECTION 3**

### **AFFECTED ENVIRONMENT**

This section establishes the basis and methodology for assessing impacts to resource areas that could be affected by the Proposed Action and No Action Alternative.

#### **3.1 ISSUES ELIMINATED FROM FURTHER ANALYSIS**

Based on the scope of the Proposed Action and the No Action Alternative, as well as preliminary analyses, the Air Force eliminated the following issues from further analysis.

##### **3.1.1 Land Use**

MacDill AFB designates land use as one of the following: airfield, urban, industrial, light industrial, commercial, institutional (educational & medical), residential, recreational, or improved vacant land. The Proposed Action is located within an open space land use area. The Proposed Action and No Action Alternative would not alter land use at MacDill AFB. Consequently, the Air Force did not conduct further analysis for potential land use impacts.

##### **3.1.2 Noise**

The meaning of noise for this analysis is undesirable sound that interferes with speech communication and hearing, or is otherwise annoying (unwanted sound). In June 1980, the Federal Interagency Committee on Urban Noise published guidelines (FICUN 1980) relating day-night average sound level (DNL) values to compatible land uses. Since their issuance, Federal agencies have generally adopted their guidelines for noise analysis. Most agencies have identified 65 DNL as a criterion that protects those most affected by noise and that can often be achieved on a practical basis. The Air Installation Compatible Use Zone (AICUZ) Study plotted noise levels from 65 to 80 DNL for a representative day at MacDill AFB. The 65 DNL contour covers the main runway, and extends about one mile southwest over Tampa Bay, and about 1½ miles northeast over



Hillsborough Bay. These contours do not extend to the recreation areas on the southeast portion of the base.

Construction methods could include hydro-axe clearing of exotic vegetation, use of backhoes, front end loaders, bulldozers and dump trucks to grade and remove fill, hydroblasting to spread fill, and hand clearing where necessary. Given the nature of the restoration sites and their proximity to personnel on base, impacts from construction noise are minimal. There would be a minimum of a 500-foot buffer between the construction activity and closest receptors for all 25 sites, except for Site 1 and Site 23. Within these sites, construction would occur adjacent to a marina, trailer park, and beach utilized for recreation; however, construction would be short-term and occur during daytime hours.

Since no major ongoing construction efforts are proposed, short-term increase in ambient noise levels from project construction would not cause significant adverse impacts on the surrounding populations, and the ambient noise level would return to its normal level following construction, the Air Force eliminated noise from further consideration in the EA.

### **3.1.3 Transportation**

The project area contains no maintained roads; however, several roadways are located adjacent to the project area. These include Marina Bay Drive to the east, Golf Course Avenue to the northeast and South Shore Road to the north and northwest. Controlled access to the project area would occur via the nearest adjacent roadway. Due to the limited amount of construction equipment and personnel required, increased use of on-base transportation systems would be negligible.

The project area is bordered to the south by Tampa Bay, which is within the MacDill AFB marine exclusion zone, a 1,000-foot buffer around the entire perimeter of the base where all watercraft are excluded from access. Therefore, boat traffic around the base would not be affected during or after construction.

Transportation of construction equipment within the project area would require the construction of temporary access routes within the project implementation

area that would be separated and fenced off from the rest of the transportation network at MacDill AFB. These routes would be unpaved and would be kept to a minimum size and include erosion controls, which are further discussed in Section 3.3, *Water Resources*. The Air Force determined that transportation would not be adversely impacted by the project and eliminated this topic from further evaluation.

### **3.1.4 Airspace and Airfield Operations**

The airspace region of influence for MacDill AFB includes a 20-nautical-mile radius from the ground surface up to 10,000 feet above mean sea level (MSL). MacDill AFB's airfield infrastructure includes a pavement system comprised of the runway, paved overruns, parking/maintenance aprons, aircraft taxiways, and arm/disarm pad. The base's one runway, Runway 04/22, runs northeast to southwest with a parallel taxiway, Taxiway G. The runway is 11,421 feet long by 151 feet wide. Both ends of the runway have 1,000-foot long concrete touchdown zones with asphalt between them. The Proposed Action would occur in the vicinity of the southeastern portion of Runway 04-22; however, the project would occur entirely within an open space area and would not result in changes to the airfield environment or airspace operations. Bird-Aircraft Strike Hazards are addressed in Section 3.6, *Safety*.

### **3.1.5 Hazardous Materials and Waste**

#### **3.1.5.1 Hazardous Materials and Waste**

Approximately 168 work centers base-wide use hazardous materials. Hazardous materials on base include various organic solvents, chlorine, freon, paints, thinners, oils, lubricants, compressed gases, pesticides, herbicides, nitrates, and chromates. A detailed tracking and accounting system is in place to identify potentially hazardous materials and to ensure that MacDill AFB organizations are approved to use specific hazardous materials. The Proposed Action and the No Action Alternative would not increase the long-term use, storage, transportation, or disposal of hazardous materials and waste. Consequently, the Proposed Action would not affect hazardous materials and waste management on MacDill AFB and this issue was eliminated from further evaluation in this EA.

### 3.1.5.2 Stored Fuel

MacDill AFB receives jet fuel (JP-8) at the Defense Fuel Supply Point (DFSP) by pipeline from Port Tampa, while commercial tank trucks deliver other fuels to the Base. JP-8 storage capacity at DFSP and MacDill AFB is over 9.6 million gallons. Diesel, gasoline, and heating oil are also stored throughout MacDill AFB in small to medium-sized underground and aboveground storage tanks ranging in size from 50 to 25,000 gallons. The Proposed Action and No Action Alternative would have no impact on stored fuels management. Consequently, the Air Force excluded stored fuel from any further evaluation.

### 3.1.5.3 Sanitary Wastewater Treatment

MacDill AFB owns and operates its sanitary sewer system consisting of sewer lines, lift stations, and a wastewater treatment plant (WWTP). The WWTP is in the southeastern corner of the base on Bayshore Drive. The WWTP is permitted to treat 1.2 million gallons per day (mgd) with a design that will provide for two mgd. Current operations are at 400,000 gallons per day that treat mainly domestic wastewater. The Air Force has determined that wastewater treatment would not be affected by Proposed Action and No Action Alternative and eliminated this issue from further evaluation in this EA.

### 3.1.5.4 Asbestos and Lead-Based Paint

Restoration activities proposed in the project area do not involve the demolition of facilities containing asbestos or lead-based paint. Therefore, the Air Force excluded asbestos or lead-based paint from any further evaluation.

## 3.1.6 Environmental Justice and Protection of Children

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, assures that Federal agencies focus attention on the potential for a proposed Federal action to cause disproportionately high and adverse health effects on minority populations or low-income populations. Potential health and safety impacts that could disproportionately affect children are considered under the guidelines

established by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. There are no environmental justice areas of low-income and/or minority or child populations located immediately adjacent to the project area, and site construction would not adversely impact low-income and/or minority or child populations. Consequently, the Air Force has eliminated environmental justice and protection of children from detailed evaluation in this EA.

### **3.1.7 Socioeconomics**

Restoration of all 25 sites would cost approximately \$5.1 million based on cost estimates for materials, transport, and installation, and this cost would be spread out over a five to ten year period. In total this would equal less than 0.43 percent of the nearly \$1.2 billion annual expenditures that MacDill AFB provides to the local economy, and would therefore constitute a negligible beneficial impact on the work force in the region during the construction period. In addition, project implementation would not result in any long-term increases in employment at the base or otherwise. Consequently, the Air Force has determined that the socioeconomic impact from this project did not warrant further evaluation and eliminated it from further consideration in this EA.

### **3.1.8 Cultural Resources**

According to the MacDill AFB Integrated Cultural Resources Management Plan (ICRMP), dated September 2006 (U.S. Air Force [USAF] 2006), no significant cultural resources, including archeological sites or historic structures, are located in the vicinity of the project area. The Air Force initiated consultation with the State Historic Preservation Office (SHPO) on 16 March 2012 to confirm that the Proposed Action would not impact historic resources (Appendix B). The review was conducted in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended and 36 CFR Part 800: Protection of Historic Properties. It was concluded in the 13 April 2012 letter from SHPO that the proposed project is not likely to have an effect on historic properties (see Appendix B). Consequently, the Air Force excluded cultural resources from any further analysis in this EA. However, should any archaeological resource be discovered during project construction, work would cease until all appropriate coordination is conducted and clearances from SHPO are obtained.

If any work not included as part of the Proposed Action or the proposed alternatives put forward in this EA is required in the future, these plans must be coordinated with 6 Civil Engineering Environmental Flight (CES/CEV) prior to their approval and implementation.

### **3.1.9 Visual Resources**

Once completed, the intent of the Proposed Action is to restore natural habitats and remove exotic plant species at MacDill AFB. Consequently, impacts to visual resources are expected to be beneficial; however, given the limited potential for off-sight views of the Project Area, impacts associated with the Proposed Action would be minor and less than significant.

The following sections describe those resource areas, which have been studied in full detail.

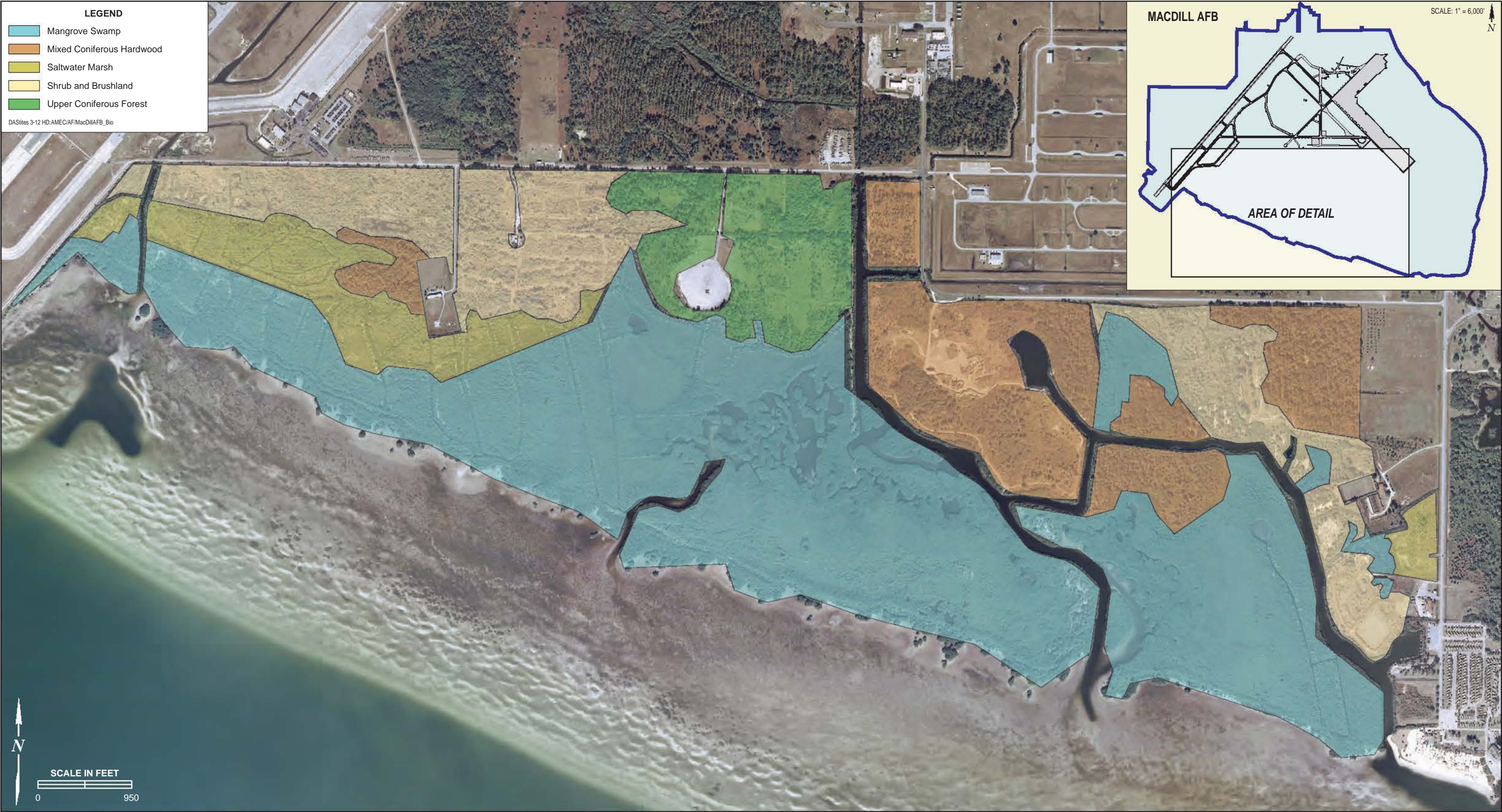
## **3.2 BIOLOGICAL RESOURCES**

### **3.2.1 Vegetation**

Five types of natural communities occur within the Project Area: Mangrove swamp; saltwater marsh; mixed coniferous hardwood; upland coniferous forest; and, shrub and brushland (Figure 3-1).

Mangrove swamps are the most extensive community within the Project Area, and are the principal estuarine wetland community on the Base. Black mangrove (*Avicennia germinans*) and white mangrove (*Laguncularia racemosa*) are the dominant species. Red mangrove (*Rhizophora mangle*) is also present at the waterward fringes of the community and are dominant along the mosquito ditches. The mangroves have been negatively impacted by historic dredge and fill activities and the excavation of mosquito ditches. The side cast spoil mounds that resulted from dredging the ditches have provided a platform for the proliferation of exotic and nuisance species such as Brazilian pepper (*Schinus terebinthifolius*), Australian pine (*Casuarina equisetifolia*), and melaleuca (*Melaleuca quinquinervia*). However, despite these impacts, the mangrove swamp community type provides valuable wildlife habitat and is protected by state and local regulations (USAF 2010).





**Biological Resources in  
the Proposed Project Vicinity**

**FIGURE  
3-1**

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.



This page intentionally left blank.

Saltwater marshes are characterized by herbaceous and shrubby, salt tolerant wetland vegetation often located in conjunction with mangrove swamps. The hydrology of this habitat is influenced by tidal patterns. These areas serve as important habitat for a large number of both transient and resident fish and wildlife species.

Forested land, including mixed coniferous hardwoods and upland coniferous forests, primarily consist of remnant natural and planted pine communities with slash pine (*Pinus elliottii*) the dominant species. Remnant natural stands are dominated by longleaf pine (*Pinus palustris*), oaks (*Quercus spp.*), maples (*Acer spp.*), cabbage palm (*Sabal palmetto*), and southern magnolia (*Magnolia grandiflora*). The understory of these forested lands, as well as the shrub and brushland communities, contain a mixtures of shrubs dominated by wax myrtle (*Myrica cerifera*), salt bush (*Baccharis halimifolia*), saw palmetto (*Serenoa repens*), and gallberry (*Ilex glabra*).

### **3.2.2 Wildlife**

MacDill AFB's location on the tip of the peninsula reduces the presence of terrestrial species, due to a lack of connectivity to surrounding terrestrial habitats. Urbanization has reduced the viability of a majority of MacDill AFB for wildlife use. Much of the remaining natural areas on Base are located in coastal areas, including the Project Area; however, the habitat quality of these areas has been negatively impacted by disturbance of the land followed by invasion by non-native plant species.

Wildlife species documented during past surveys at MacDill AFB included one reptile, 10 mammals, and 79 birds. Based on the types of habitat available, the survey concluded that 20 species of reptiles, 17 mammal species, and 158 species of birds have the potential to occur within the boundaries of the base (USAF 2010).

The majority of species associated with the mangrove community are birds, including shore birds, wading birds, and raptors, which are likely to use the Project Area for foraging and nesting. Literature suggests that species likely to occur within mangrove communities include wading birds such as the great



egret (*Ardea alba*), great blue heron (*Ardea herodias*), yellow-crowned night heron (*Nyctanassa violacea*), black-crowned night-heron (*Nycticorax nycticorax*), green heron (*Butorides virescens*), and glossy ibis (*Plegadis falcinellus*), and water birds such as the American White pelican (*Pelecanus erythrorhynchos*), laughing gull (*Larus atricilla*), herring gull (*Larus argentatus*), caspian tern (*Sterna caspia*), and royal tern (*Sterna maxima*). These birds, their eggs, and nests are protected by the Migratory Bird Treaty Act (MBTA). Migratory birds, as listed in 50 CFR § 10.13, are ecologically and economically important to the U.S. and enable various recreational activities such as feeding, bird watching, behavioral studying, and photography collections.

MacDill AFB provides limited value for nesting due to the lack of areas isolated from terrestrial predators, especially raccoons. Only scattered pairs of green-backed heron, yellow-crowned night herons, and great blue herons are expected to nest on MacDill AFB. Other species that may potentially breed within mangrove communities include the gray kingbird (*Tyrannus dominicensis*), black-whiskered vireo (*Vireo altilaquus*), prairie warbler (*Dendroica discolor*), and possibly the mangrove cuckoo (*Coccyzus minor*). These birds, their eggs, and nests are protected by the MBTA; however, none of these species have been identified nesting at MacDill AFB (USAF 2010). Concentrations of shorebirds are routinely observed (and have been documented during previous surveys) at two locations on the sandy coast adjacent to the east of the Project Area. No shorebird colonies were identified within the Project Area.

Many of the mammalian species inhabiting MacDill AFB, such as the raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), armadillo (*Dasypus novemcinctus*), and striped skunk (*Mephitis mephitis*), are adapted to urban environments and may forage around the mangrove communities and existing shoreline. Manatees have been identified in the near shore waters off MacDill AFB in the past and may occasionally visit the large tidal creeks along the southern portion of MacDill AFB. Protected species are discussed further in Section 3.2.3.

### 3.2.3 Sensitive Species

A total of 20 special-status species are known to occur on-base (USAF 2010). This includes two endangered species, five threatened species, and thirteen species of concern, as presented in Table 3-1.

Informal plant surveys indicate that no threatened or endangered plant species are present on base; however, pursuant to Florida Statutes Section 161.242, it is unlawful for any purpose to cut, harvest, remove, or eradicate sea oats or sea grapes from any public or private land without consent of the property owner.

In 2005, MacDill AFB completed an updated Endangered Species Population Survey (USAF 2005). This survey did not identify nesting sites or other protected species within the Project Area. MacDill AFB has not been identified to have breeding populations of any Federally-listed threatened or endangered species and none of MacDill AFB is designated as Critical Habitat (USAF 2010).

The mangrove community is potentially utilized for foraging by such wading bird species as the little blue heron, reddish egret, snowy egret, tricolored heron, white ibis and wood stork. The forested upland communities provide habitat for several state and federally listed species. The southeastern American kestrel, the American bald eagle, and gopher tortoise have been observed within this community on the Base; however, none have been observed within the Project Area (USAF 2010).

A 1,000-yard permanent restricted area was established in the navigable waters around MacDill AFB in 2003. All persons, vessels, and other craft are prohibited from entering, transiting, anchoring, or drifting within the restricted area for any reason without the permission of the Commander, MacDill AFB, Florida, or his/her authorized representative. On May 10, 2005, representatives from the USFWS, Mote Marine Laboratory, and MacDill AFB conducted a marine survey of the shallow nearshore waters within the Restricted Area along MacDill's southern coastline. No Federal or state-listed species or species of concern were collected, observed or recorded during the survey (MacDill AFB 2012).

**Table 3-1. Summary of Protected Species Identified at MacDill AFB**

Common name	Scientific Name	Status	
		Federal	State
Reptiles/Amphibians			
American alligator	<i>Alligator mississippiensis</i>	T (SA)	SSC
Atlantic loggerhead turtle	<i>Caretta caretta caretta</i>	T	T
Atlantic green turtle	<i>Chelonia mydas mydas</i>	E	E
Gopher tortoise	<i>Gopherus polyphemus</i>	C	T
Gopher frog	<i>Rana capito</i>	-	SSC
Florida pine snake	<i>Pituophis melanoleucus mugitus</i>	-	SSC
Short-tailed snake	<i>Stilosoma extenuatum</i>	-	T
Birds			
Roseate spoonbill	<i>Ajaia ajaja</i>	-	SSC
Limpkin	<i>Aramus guarauna</i>	-	SSC
Burrowing owl	<i>Athene cunicularia</i>	-	SSC
Piping plover	<i>Charadrius melodus</i>	T	T
Southeastern snowy plover	<i>Charadrius alexandrinus tenuirostris</i>	-	T
Little blue heron	<i>Egretta caerulea</i>	-	SSC
Reddish egret	<i>Egretta rufescens</i>	-	SSC
Snowy egret	<i>Egretta thula</i>	-	SSC
Tricolored heron	<i>Egretta tricolor</i>	-	SSC
Southeast American kestrel	<i>Falco sparverius paulus</i>	-	E
Florida sandhill crane	<i>Grus canadensis pratensis</i>	-	T
American oystercatcher	<i>Haematopus palliatus</i>	-	SSC
Wood stork	<i>Mycteria americana</i>	E	E
Brown pelican	<i>Pelecanus occidentalis</i>	-	SSC
Least tern	<i>Sterna antillarum</i>	-	T
Black skimmer	<i>Rynchops niger</i>	-	SSC
White ibis	<i>Eudocimus albus</i>	-	SSC

**Table 3-1. Summary of Protected Species Identified at MacDill AFB (Continued)**

Common name	Scientific Name	Status	
		Federal	State
Mammals			
Florida mouse	<i>Podomys floridanus</i>	-	SSC
West Indian (FL) manatee	<i>Trichechus manatus</i>	E	E
Fish			
No State or Federally listed fish species are known to exist on Base			
Plants			
No State or Federally listed plant species are known to exist on Base			

Species listed in bold have potential to occur in Project Area.

T=Threatened, T(SA)=Threatened/Similarity of Appearance, E= Endangered, SSC= Species of Special Concern (C2 candidate species for listing no longer recognized by USFWS)

Source: USAF 2005.

Manatees utilize waters such as coastal habitats, estuarine habitats, and freshwater river systems. They feed on seagrass and freshwater vegetation. The manatee is known to occur in Tampa Bay and has been documented in the nearshore waters of MacDill AFB (USAF 2010).

### 3.2.4 Wetlands

Wetlands are subject to regulatory authority under Section 404 of the Clean Water Act (CWA) and EO 11990, *Protection of Wetlands*. Wetlands are defined by the U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (USEPA) as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR § 328.3[b]). Wetlands are protected as a subset of the *Waters of the U.S.* under Section 404 of the CWA; the USACE requires a permit for any activities crossing wetlands or other Waters of the U.S.

EO 11990 requires all federal agencies to "take action to minimize the destruction, loss or degradation of wetlands and enhance the natural and beneficial values of

wetlands." Wetlands comprise most of the Project Area and are additionally located immediately adjacent to the project area (USAF 2010). The community immediately adjacent to the shoreline is classified as an estuarine, intertidal system that is regularly flooded (designated as E2FLN) according to National Wetlands Inventory (NWI) data. E2FLN is a tidally influenced, shallow water habitat with a water depth ranging from 0-4 feet depending on the tide. Adjacent to and waterward of this system type, approximately 400 feet from the shoreline, the waters are classified as estuarine subtidal open water systems (E1OWL). Based on Florida Land Use, Cover and Forms Classification System (FLUCFCS) classification, the entire water environment adjacent to the shoreline is classified as 541, Embayments opening directly into the Gulf of Mexico or the Atlantic Ocean.

### **3.3 WATER RESOURCES**

Water resources include *surface water*, *groundwater*, and *floodplains*. These are addressed separately in the following sections.

#### **3.3.1 Surface Water**

Surface water resources include ocean, lakes, rivers, and streams that collect and distribute water from precipitation and natural or human-created water collection systems. Surface water flows at MacDill AFB are primarily from stormwater runoff. Topographic maps show that the entire Base is an independent drainage area with no natural surface waters entering or leaving the site prior to final discharge into Tampa Bay. Most of the Base drains toward the southern tip of the Interbay Peninsula; however, the easternmost section of the Base drains toward Hillsborough Bay.

Raccoon Hammock and Broad Creek are the only two natural tidal creeks that occur within the Project Area, on the southern portion of MacDill AFB. These creeks wind through the mangrove community and discharge into Tampa Bay. The mangrove community is crisscrossed with man-made drainage canals (USAF 2010).

The USEPA issued a National Pollutant Discharge Elimination System (NPDES) multi-sector stormwater general permit (No. FLR05E128) in April 2006 and a multi-sector general NPDES permit (No. FLR04E059) to MacDill AFB in March 2008. These permits authorize the discharge of stormwater associated with industrial activity and non-industrial stormwater discharges, respectively. Areas of potential runoff contamination at the Base are the runways and the airfield aprons.

To control for discharges of floating pollutants resulting from accidental spills, the Base maintains a number of boom-type containment systems across stormwater channels. The Base also maintains a Spill Prevention Control and Countermeasures (SPCC) Plan to satisfy 40 CFR 112. Per the same regulation, the base maintains a Facility Response Plan given the location of the Base adjacent to navigable waters and shorelines, as well as the amount of fuel storage capacity existing on site.

### **3.3.2 Groundwater**

Groundwater comprises subsurface water resources that are interlaid in layers of rock and soil, called aquifers, and are recharged by surface water seepage. There are two aquifer systems underlying MacDill AFB, the surficial aquifer and the Floridan Aquifer. The surficial aquifer system, which consists generally of sand, clayey sand, and shell, is unconfined and is approximately 20 feet thick; however, the surficial aquifer is not used for water supply at MacDill AFB. In residential areas beyond the Base boundaries, small-diameter wells are installed in the surficial aquifer to supply small irrigation systems. The Floridan Aquifer underlies the surficial aquifer and is separated by a clay confining layer. The Floridan Aquifer is a major source of groundwater in the region, but is not directly used for water supply at MacDill AFB. The City of Tampa supplies potable water to MacDill AFB. The primary source of water for the City of Tampa is the Hillsborough River. During the dry season, the City also purchases water from Tampa Bay Water (TBW). This source is supplied from the TBW Aquifer Storage and Recovery (ASR) system, groundwater, surface water, and desalinated seawater supplies. There are no potable water supply wells located on MacDill AFB.



The water table in the surficial aquifer is shallow and ranges from land surface near Tampa Bay and tidal creeks to approximately five feet below land surface at inland locations. Groundwater levels and flow directions generally are determined by flow gradients and are often tidally influenced by ditches and canals and by Hillsborough and Tampa Bays. The direction of groundwater flow in the surficial aquifer is generally radial from the north-central portion of the Base towards the coastline. Groundwater mounding or a localized elevation of the water table above natural levels has been shown to occur in the golf course area where reclaimed water from the on-base wastewater treatment plant is applied by spray irrigation (USAF 2010).

### **3.3.3 Floodplains**

Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. Such lands may be submerged by floodwaters. EO 11988, *Floodplains Management*, requires Federal agencies to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains. Federal agencies are required to evaluate the potential effects of any action taken in the floodplain to ensure that its planning programs and budget requests reflect consideration of flood hazards and floodplains management. When an action is proposed for location in the floodplain, the Air Force is required to consider alternatives to avoid adverse effects and incompatible development in the floodplain. When the only practicable alternative consistent with the law and with the policy set forth in the EO requires siting in the floodplain, the project must be designed or modified to minimize the potential harm to the floodplain. Finally, the agency is required to provide public notice and an opportunity for public comment prior to proceeding with any action in the floodplain.

According to information provided by the Federal Emergency Management Agency (FEMA Maps dated 2008), 80 percent (4,510 acres) of the Base is within the 100-year floodplain (USAF 2010). Floodplains comprise the entirety of the Project Area (Figure 3-2).



Hydrologic Resources in  
the Proposed Project Vicinity

FIGURE  
3-2

EA

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

### 3.4 ENVIRONMENTAL RESTORATION PROGRAM

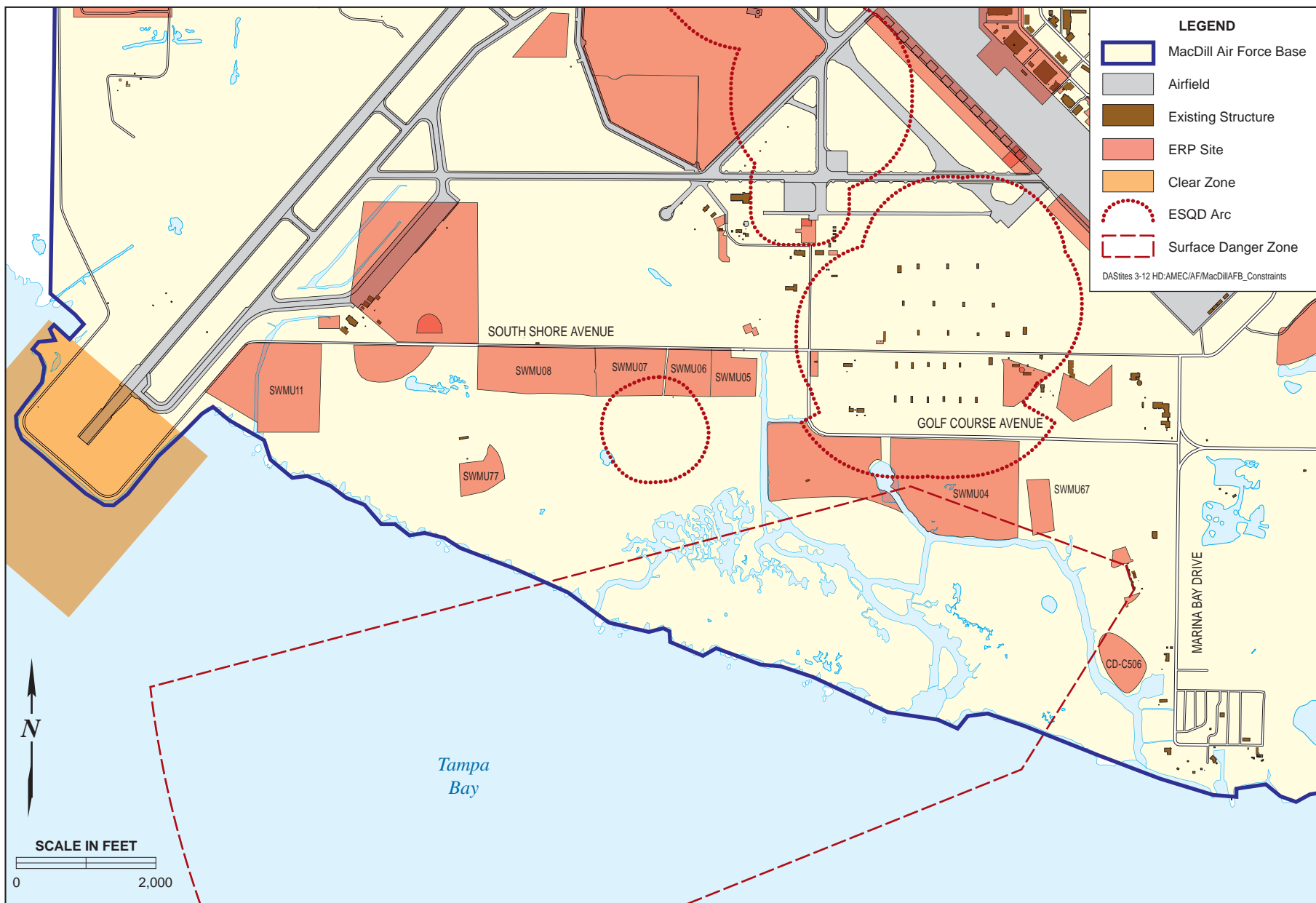
The Environmental Restoration Program (ERP), formerly known as the Installation Restoration Program, is a subcomponent of the Defense ERP that became law under the Superfund Amendments and Reauthorization Act (SARA). The ERP requires each Department of Defense (DoD) installation to identify, investigate, and clean up hazardous waste disposal or release sites. In accordance with USAF policy, all ERP sites at the base are addressed in a manner consistent with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) or Resource Conservation and Recovery Act (RCRA) process. Restoration projects on MacDill AFB are conducted under two regulatory programs: those governing petroleum releases from underground storage tanks (USTs), and those governing cleanup of Solid Waste Management Units (SWMUs) in accordance with the installation's RCRA permit. There are 49 SWMUs and ERP sites scattered throughout the installation. Of the 49 SWMUs and ERP sites, 21 are No Further Action (NFA), one is pending NFA, and 27 are Remedy in Place (RIP). None of these sites have been identified on the National Priorities List under CERCLA.

There are 14 ERP sites located within the Project Area; however only nine of these sites are located in areas that would be potentially disturbed during implementation of the Proposed Action (Figure 3-3). These nine sites are summarized in Table 3-2, and further discussed below.

SWMU 04 – Former Rubble Landfill: In December 1997, the USAF requested that the site be approved for “No Further Action” status. The Florida Department of Environmental Protection concurred in a letter, dated 30 January 1998. The site is therefore closed (FDEP 1998).

SWMU 05 – Former Landfill at Washrack: The site is a former base landfill, which was operated from 1959 to 1962. The landfill was reported to contain general rubbish. The landfill was in operation during the time when major industrial activities, which generated hazardous wastes at the Base, were in operation and the disposal of industrial or hazardous wastes in the landfill could have occurred. The approved remedy for the site is groundwater use

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.



**Table 3-2. Summary of ERP Sites within the Project Area**

ERP Site ID	Site Name	Description of Contaminants	Status
SWMU04	Former Rubble Landfill	Site closed	NFRAP II
SWMU05	Landfill at Washrack	Benzo(a)pyrene equivalent	RA-O
SWMU06	Landfill at EOD East	Iron, manganese	RA-O
SWMU07	Landfill at EOD West	Arsenic, iron, vinyl chloride	RA-O
SWMU08	Landfill West	Arsenic, benzene, iron, manganese, vanadium, vinyl chloride	RA-O
SWMU11	Former Chemical Munitions Landfill	Heavy metals, pesticides, and other chemical agents	RA-O
SWMU67	Former Firing Range	Lead	LTM
SWMU77	Landfill at EOD South	Ordinance and munitions debris	LTM
CD-C506	Dredge Spoil Pile	Heavy metals, pesticides, and other chemical agents	Preliminary investigations only

NFRAP II - No Further Response Action Planned, Area Below Risk Screening Levels

RA-O - Remedial Action-Operation

LTM - Long-Term Management

Sources: FDEP 1998, MacDill AFB 2006; 2009; and 2010a-e.

restrictions, surface water monitoring, and the implementation of non-residential Land Use Controls (LUCs) (MacDill AFB 2010a).

SWMU 06 - Former Landfill at Explosive Ordnance Disposal East: This ERP site is a former Base landfill, which was operated from 1962 to 1963. The landfill was reported to contain general rubbish; however, similar to SWMU 05, the landfill was operated during a time of industrial activities and, therefore, could have received hazardous wastes. The approved remedy for the site is non-residential LUCs and groundwater use restrictions (MacDill AFB 2010b).

SWMU 07 - Former Landfill at Explosive Ordnance Disposal West: This ERP site is a former Base landfill, which was operated from 1963 to 1965. The landfill was reported to contain general rubbish; however, similar to SWMU 05 and SWMU 06, the landfill was operated during a time of industrial activities and, therefore, could have received hazardous wastes. In addition, in 1965 it is possible that the landfill received weathered aviation gasoline sludge. The approved remedy for the site is Monitored Natural Attenuation (MNA) for groundwater, groundwater

restrictions, surface water monitoring, and LUCs. Biennial groundwater and surface water monitoring is currently being conducted, along with annual non-residential LUC surveillance (MacDill AFB 2010c).

**SWMU 08 – Former Landfill West:** This ERP site is a former Base landfill, which was operated from 1963 to 1965. The landfill was reported to contain general rubbish; however, similar to the other ERP sites in the vicinity, the landfill was operated during a time of industrial activities and, therefore, could have received hazardous wastes. This site may also have received weathered sludge. The approved remedy for the site is MNA for groundwater, groundwater restrictions, surface water monitoring, and LUCs. Biennial groundwater and surface water monitoring is currently being conducted, along with annual non-residential LUC surveillance (MacDill AFB 2010d).

**SWMU 11 – Former Chemical Munitions Site:** Although this site was never formally used as a landfill, chemicals from the former chemical agent storage area were reportedly buried there between 1950 and 1955. Detailed documentation of the types or quantities of materials disposed at the site does not exist. Between March 1952 and November 1953, a U.S. Army Chemical Corps detachment at MacDill AFB was reportedly ordered to turn over some ordnance to the Air Force EOD for disposal, including a 500-pound mustard gas bomb with a live explosive burster. The bomb was reportedly buried 4 feet deep across Southshore Road from the SAC Alert facility (now a Special Operations Command Central Facility), near the water's edge. U.S. Army Technical Escort records dating back to the time of this incident show the delivery date of the bomb to MacDill AFB, but no departure date. A long-time base employee reported that chemical agent identification sets were buried in the area. Interviews with former base employees revealed that 2-foot-long canisters were unearthed at the site in 1956. Gas seeping from the canisters caused extreme eye irritation, and the canisters were subsequently reburied. Deposits of white phosphorus that ignited when exposed have also been reported at SWMU 11 (MacDill AFB 2006).

**SWMU 67 – Former Firing Range:** The former firing range was in use between 1941 and 1982, which resulted in localized lead contamination in the soil. Investigation activities at SWMU 67 began in 1997 with a Phase I RCRA Facility



Investigation (RFI). The final RFI was approved in June 2004. Additional soil collection was conducted in 2005 and 2006 to more precisely define the extent of contamination along a backstop berm and target trench berm. In March 2006, additional groundwater screening was conducted to assess conditions within the surficial aquifer in the vicinity of SWMU 67 which confirmed that groundwater contamination was not a potential concern. The site is scheduled for closure in 2021 and anticipated remediation activities include excavation and sieving of the face of the backstop and target trench berm and stabilizing the lead contaminated soils prior to offsite disposal. (MacDill AFB 2009).

SWMU 77 - Landfill at EOD South: This ERP site is suspected to have been used as an ordnance destruction area with incidental disposal, but is not documented as a base landfill. The site was initially investigated due to the presences of ordnance debris that extrude from numerous soil piles in the area. Further investigations of the site were performed in 1997 and from 1999 through 2004. No contaminants of concern were found in the media sampled (groundwater, surface water, soil, and other sediments). Unexploded ordnances screening was conducted at each soil sampling location. The approved remedy in for the site is LUCs for soils, due to the presence of ordnance and munitions debris. Annual LUC surveillance and groundwater monitoring have been conducted at the site since 2008 to ensure no contamination of groundwater has occurred (MacDill AFB 2010e).

CD-C506 -Dredge Spoil Pile: After the 2004 hurricanes, a portion of the coast was dredged to repair the damaged shoreline. Dredged soils were placed in an embankment area beginning approximately 150 feet west of Facility 60. Initial sampling indicated the presence of cadmium, copper lead, mercury, zinc, indeno(1,2,3-cd)pyrene, benzo(b)flauranthene, and benzo(a)pyrene in the marina basin sediments. Additional tests detected concentrations of polynuclear aromatic hydrocarbon (PAHs), polychlorinated biphenyls (PCBs), pesticides, and metals above sediment and soil ecological screening criteria. The RFI is in the process of being developed. A work plan that describes the RCRA Facility investigation that will be performed at the site has been developed (MacDill AFB 2011). The principal investigation and reporting activities to be conducted at the site include: the collection of soil, groundwater, surface water and sediment samples to determine the nature and extent of contamination; determination of

the extent of dredge material on the site; evaluation of potential contaminant migration routes; and, determination of potential risks to human and ecological receptors.

Plans for future development in the areas of any of the ERP sites should take into consideration the possible restrictions and constraints that they represent. The FDEP regulates cleanup activities at petroleum sites, and has entered into a Petroleum Contamination Agreement with MacDill AFB. The investigation and cleanup of SWMUs is conducted in accordance with the Hazardous and Solid Waste Amendments (HSWA) permit issued to the base under USEPA ID No. FL6 570 024 582.

### **3.5 GEOLOGICAL RESOURCES**

Geological resources consist of the earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography, soils, geology, and, where applicable, paleontology.

#### **3.5.1 Topography**

MacDill AFB is in the Pamlico Terrace, which rises gently from the coast to about 25 feet above sea level. Elevations in the Project Area range from sea level at the southern edge to about five feet above sea level in the northern portions. Much of the base is less than five feet above mean sea level (USAF 2010).

#### **3.5.2 Geology**

MacDill AFB is situated in the Gulf Coastal Lowlands physiographic region. There are three principal lithologic sequences in the area. The top unit is unconsolidated sand, clay, and marl. This unit might include remnants of the Hawthorn Formation composed of sand, clay, and thin lenses of limestone. Sands in this unit range from five to 20 feet thick with clay layers up to 40 feet thick. This surficial layer is very thin or even absent on the eastern side of the base, and underlying limestone formations sometimes outcrop in this area. The next deepest layer is composed of Tampa and Suwannee Limestones, which range from 250 to 500 feet thick. Below this layer are the Ocala Group; Avon

Park, Lake City, and Oldsmar Limestones; and Cedar Keys Limestone, which are about 2,300 feet deep.

Sinkholes are common in the Hillsborough County area, but they are uncommon on MacDill AFB because of overlying impervious layers of clay, limited groundwater recharge, and the presence of a slow discharge zone for the Floridan Aquifer (USAF 2010).

### **3.5.3 Soils**

U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) maps identify six primary soil series within the Project Area: the *Malabar Series*, the *Myakka Series*, the *Pomello Series*, the *St. Augustine Series*, the *Wabasso Series*, and the *Ona Series*; however only the *Malabar Series* and the *Myakka Series* occur over substantial areas of the Project Area (NRCS 2012; refer to Appendix H, *Soil Survey*).

Myakka Fine Sand (frequently flooded) is the most common series within the Project Area. This series is associated with tidal areas and occurs mainly on mangrove areas. These soils are subject to tidal flooding, are very level, and are poorly drained. Malabar Fine Sand is generally adjacent to the Myakka Fine Sand. This includes flatwood areas, portions of the eastern Project Area, and some development. They are nearly level and poorly drained, often occurring in low-lying sloughs and shallow flatwoods depressions. Myakka is a hydric soil association with Myakka Fine Sand found in tidal areas associated with mangroves. Malabar Fine Sand is also a hydric soil found adjacent to Myakka Fine Sand. There are no prime or unique farmland soils on MacDill AFB.

## **3.6 SAFETY**

### **3.6.1 Occupational Health and Safety**

Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of on-site military and civilian workers is safeguarded by numerous DoD and USAF regulations designed to comply with

standards issued by the Occupational Safety and Health Administration and USEPA. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, including hearing protection, engineering controls, and maximum exposure limits for workplace stressors. Industrial hygiene is the responsibility of contractors and USAF personnel, as applicable. Examples of contractor responsibilities include but are not limited to the following:

- To review potentially hazardous workplaces and monitor exposure to workplace chemical (e.g., asbestos, lead, hazardous material), physical (e.g., noise propagation), and biological (e.g., infectious waste) agents;
- To recommend and evaluate controls (e.g., hearing protection, ventilation, respirators) to ensure personnel are properly protected or unexposed; and
- To ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures, potentially harmful repetitive physical exposure or engaged in hazardous waste work.

### **3.6.2 Bird-Aircraft Strike Hazard**

The primary safety concern at facilities with aircraft operations is the potential for aircraft mishaps (i.e., crashes), which may be caused by mid-air collisions with other aircraft or objects, weather difficulties, or bird-aircraft strikes. Bird-aircraft strike hazard (BASH) is defined as the threat of aircraft collision with birds and other wildlife during aircraft operations.

Most birds fly close to ground level; correspondingly, more than 90 percent of all reported bird-aircraft strike hazard (BASH) incidents occur below 3,000 feet above ground level (AGL) and/or in the immediate vicinity of the airfield (Federal Aviation Administration [FAA] 2007). At most military bases, about half of reported bird-strikes occur in the immediate vicinity of the airfield and another 25 percent occur during low-altitude local training exercises. Waterfowl present the greatest BASH potential due to their congregational flight patterns and because, when migrating, they can be encountered at altitudes of up to 20,000 feet AGL. Raptors also present a substantial hazard due to their size and soaring flight patterns.

MacDill AFB has a BASH plan that provides guidance for reducing the incidents of bird strikes in and around areas where flying operations occur. BASH control techniques involve effecting wildlife to disperse birds from the airfield to give short-term relief from an immediate safety hazard. BASH control techniques require a combination of different dispersal tools, known as Integrated Pest Management, which may include but are not limited to: pyrotechnics, bioacoustics, harassment using dogs and depredation. A depredation permit is not required for non-lethal harassment of migratory birds on the airfield in accordance with 50 CFR 21.41 Migratory Bird Depredation Permits. MacDill AFB was issued a Federal depredation permit through the USFWS, which authorizes the take of migratory birds species to relieve or prevent injurious situations affecting public safety. The permit authorizes the take of the minimum numbers and species of birds.

MacDill AFB currently utilizes the above-mentioned techniques to disperse birds and wildlife from the MacDill airfield, relying most heavily on the use of a dog for harassment. It is not currently believed that increasing or expanding the use of these dispersal techniques would completely eliminate attempts by birds to land, forage, and/or attempt to nest on the airfield.

### **3.6.3 Clear Zones**

Accident Potential Zones (APZs)—rectangular zones extending outward from the ends of active runways at military bases—delineate those areas recognized as having the greatest risk of aircraft mishaps, most of which occur during takeoff or landing. Clear Zones (CZs) are the areas closest to the end of the runway, which is considered the most hazardous area. At MacDill AFB, CZs extend from both ends of the runway. As presented in Figure 3-3, the CZ at the southern end of Runway 04 is primarily located over Tampa Bay and a narrow strip of land constructed around the runway. No CZs are located within the Project Area.

### **3.6.4 Explosives Safety**

Air Force Manual 91-201, *Explosives Safety Standards*, requires that defined explosive safety quantity-distance (ESQD) arcs be maintained between explosive materials storage (e.g., munitions) and handling facilities and a variety of other

types of facilities. ESQD arcs are determined by the type and quantity of explosive materials stored; within ESQD arcs, development is either restricted or altogether prohibited in order to maintain personnel safety and minimize the potential for damage in the event of an accident.

ESQD arcs have been established around various facilities adjacent to the airfield, including a munitions hold area, hot cargo pad, and the munitions storage area. Two ESQD arcs are located within the Project Area (refer to Figure 3-3). The ESQD arc located within the north central portion of the Project Area is associated with an Explosive Ordnance Disposal (EOD) area. The EOD area is used to detonate unserviceable ordnance to support the military mission and for training purposes. Additionally, a portion of an ESQD arc is located in the northeastern portion of the Project Area (USAF 2007).

Surface Danger Zones (SDZs) are buffers that are generated around small arms and skeet ranges to ensure that a minimum safe distance is present within areas where munitions are actively exploded. The SDZ associated with the small arms range immediately to the east of the Project Area, comprises a substantial portion of the central and eastern Project Area (refer to Figure 3-3). Coordination with Combat Arms Training and Maintenance would be required to ensure safety and to secure proper waivers for personnel working in the area.

### **3.7 AIR QUALITY**

#### **3.7.1 Climate**

Average temperatures near MacDill AFB generally range from approximately 53 degrees Fahrenheit (°F) in the winter months to approximately 86 °F in the summer months with an average annual temperature of 81 °F (Southeast Regional Climate Center [SRCC] 2012). Average annual rainfall near MacDill AFB is 51.7 inches (SRCC 2012).

MacDill AFB is located in a fairly breezy area. For each month of the year, the average wind speed is at least 7 miles per hour (mph) and the annual average wind speed is approximately 8 mph. The prevailing wind direction throughout the year is from the south-southwest (Windfinder 2012).



### 3.7.2 Baseline Air Emissions

MacDill AFB is located in Hillsborough County within the West Central Florida Intrastate Air Quality Control Region (AQCR), as defined in 40 CFR 81.96. An air emissions inventory is an estimate of total mass emission of pollutants generated from a source or sources over a period of time, typically a year. The quantities of air pollutants are generally measured in pounds per year or tons per year. Emission sources may be categorized as point, area, or mobile emission sources. Point sources are stationary sources, which can be identified by name and operated at a fixed location. Area sources are stationary sources of emissions too small to track individually, such as gas stations, small office buildings, or open burning associated with agriculture, forest management, and land clearing activities. Mobile sources are vehicles or equipment with gasoline or diesel engines, e.g., an airplane or a ship. Mobile sources are divided into two types, on-road and non-road. On-road mobile sources are vehicles such as cars, light trucks, heavy trucks, buses, engines, and motorcycles. Non-road sources are aircraft, locomotives, diesel and gasoline boats and ships, personal watercraft, lawn and garden equipment, agricultural and construction equipment, and recreational vehicles. Accurate air emissions inventories are needed for estimating the relationship between emissions sources and air quality. The most recent (2008) emission inventory data from the USEPA AirData web site for Hillsborough County, which includes MacDill AFB (USEPA 2008) are provided in Table 3-3 and include point, area, and mobile data. Hillsborough County is currently designated as a non-attainment area for lead (Pb) (USEPA 2012).

**Table 3-3. 2008 Baseline Emissions Inventory for Hillsborough County, Florida**

	CO (tpy)	SO <sub>x</sub> (tpy)	NO <sub>x</sub> (tpy)	VOC (tpy)	PM <sub>10</sub> (tpy)*	PM <sub>2.5</sub> (tpy)*	Pb (tpy)
Total Emissions	200,190	19,084	56,368	35,785	89,400	89,400	57

Notes: \*Particulate matter emissions include both filterable and condensable emissions.

tpy – tons per year

Source: USEPA 2008.

The level at which the USEPA recommends consideration of radon mitigation measures is 4 picocuries per liter (pCi/L). According to a sampling report

obtained from 6 AMDS/SGPB, radon is not considered a concern at MacDill AFB (USAF, 1987). All samples analyzed were below the USEPA target levels of 4 pCi/L.

### **3.7.3 Sensitive Receptors**

The impact of air emissions on sensitive members of the population is a special concern. Sensitive receptor groups include children, the elderly, and the acutely and chronically ill. The locations of these groups include residences, schools (grammar schools and high schools), playgrounds, daycare centers, convalescent homes, and hospitals.

The proposed location of the mangrove wetland restoration program is within the southeastern corner of the Interbay Peninsula, at Gadsden Point, at the southern edge of MacDill AFB. Land uses adjacent to the project area include Runway 04/22 to the north, the Tampa Bay to the south and west, and a marina, trailer park, and beach utilized for recreation to the east. The trailer park would constitute sensitive receptors due to its potential to house children and the elderly.



## SECTION 4

### ENVIRONMENTAL CONSEQUENCES

This section presents an analysis of the potential environmental consequences of the Proposed Action and the No Action Alternative on the environmental resource areas evaluated in Section 3.0. The Proposed Action includes the construction of 25 ecosystem restoration sites proposed in Section 2.3, *Detailed Description of Proposed Action*. The No Action Alternative was also considered as an alternative to the implementation of the Proposed Action. For most resource areas, potential environmental consequences have been grouped and analyzed by type of restoration activity, unless the considerations for potential impacts to specific resources warrant a different approach.

#### 4.1 BIOLOGICAL RESOURCES

##### 4.1.1 Proposed Action

###### 4.1.1.1 Mosquito Ditch Restoration Sites

###### Vegetation

Construction-related activities for the proposed Mosquito Ditch Restoration restoration sites would result in temporary impacts to vegetation communities including mangrove swamps, which are the most extensive community within the Project Area. Exotic plants established on the spoil mounds adjacent to the mosquito ditches, primarily Brazilian pepper, would be cleared from at each site by hand cutting and chipping on site. For the most part, revegetation of disturbed areas would occur naturally after removal of exotic plant species and restoration of the natural hydrologic regime. When required, native vegetation would be planted and would include aquatic, emergent, and transitional species. Appropriate plant species which match the hydrologic conditions for the site would be selected for each restoration site to ensure the long term survivability of the plants. After initial restoration activities, maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork. Given the intent of the Proposed Action to restore these habitats to their natural function and plant community distribution and to remove exotic plant species, impacts to vegetation are expected to be less than

significant and minor in the short-term and a moderate long-term benefit is anticipated to occur from proposed activities at the Mosquito Ditch Restoration Sites under the Proposed Action.

### Wildlife

Due to an increase in turbidity in the surface waters within and adjacent to the individual Mosquito Ditch Restoration Sites, the Proposed Action could have a minor short-term adverse impact on aquatic species. The proposed restoration activities would disturb bottom sediments and increase nearby water turbidity during construction. Increased water turbidity can impact aquatic animal life by altering feeding patterns and disorienting aquatic organisms in freshwater environments. Implementation of Best Management Practices (BMPs) as typically required by Federal, state, and local agency permitting including erosion and turbidity control structures would substantially reduce the amount and lateral extent of turbidity impacts to surface water, thereby reducing the impacts to aquatic life. Silt fencing and floating turbidity barriers would be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. In areas where trenching for silt fencing would be detrimental to tree roots, staked hay bales may be necessary. All measures would remain in place in good working order until soils have stabilized sufficiently, after which all control measures would be removed. It is presumed that any mobile aquatic life, such as fish or invertebrates, would temporarily leave the area while construction activities are occurring and return once construction is completed. Short-term impacts to aquatic organisms could result from the Proposed Action at the Mosquito Ditch Restoration Sites but are considered minor and less than significant. No long-term impacts to aquatic life are anticipated.

Short-term impacts to terrestrial wildlife that would result from implementation of the Proposed Action include the temporary disturbance of avian species including shore birds, wading birds, and raptors, which are likely to use the Project Area for foraging and nesting. Other wildlife species with the potential to occur in the Project Area include mammalian species such as the raccoon and opossum, which may forage around the mangrove communities and existing shoreline. Potential impacts to sensitive or protected wildlife species are

described in detail below. Other similar, suitable foraging habitat is available both within un-impacted portions of the Project Area as well as areas adjacent to the Project Area. Given that individual restoration sites would be sequenced over the next ten years, it is anticipated that any displaced wildlife would be able to forage and perform other life processes elsewhere within and adjacent to the Project Area. Proposed construction activities would not be so disruptive that these wildlife species would not be able to continue their normal activities and behaviors beyond the restoration sites. Upon completion of the Proposed Action, wildlife would return to the restoration sites.

Given the intent of the Proposed Action, the individual habitat restoration projects would be expected to provide enhanced foraging habitat and protection for these wildlife species. Therefore, a negligible, and less than significant short-term adverse impact may occur due to wildlife displacement during construction activities and a moderate long-term benefit due to restoration of natural mangrove and wetland habitat is anticipated to occur from implementation of the Proposed Action at the Mosquito Ditch Restoration Sites.

#### Sensitive Species

Protected species including, but not limited to, West Indian manatee (*Trichechus manatus*), White ibis (*Eudocimus albus*) and Wood storks (*Mycteria Americana*) have the potential to occur within the Project Area. Table 3-1 includes the Federally-listed and state-listed species that have been identified at MacDill AFB. Consultation with the U.S. Fish and Wildlife Service (USFWS) was conducted to insure compliance with the Endangered Species Act. USFWS provided concurrence with the analysis and findings of this EA on 6 February 2013 (see Appendix B). The Project Area is not considered critical habitat for any listed species. Some listed avian species that use the waters off the mangrove swamp for feeding could be temporarily displaced during implementation of the Proposed Action. This would constitute a minor, less than significant short-term impact to listed species on MacDill AFB. Following construction, the Proposed Action is anticipated to have a minor long-term benefit for protected species and no long term significant adverse impacts.

Because the proposed construction work along the tidal creeks or along the shoreline could potentially affect the West Indian manatee, contractors performing construction activities in these areas would be required to follow the Standard Manatee Conditions for In-Water Work (presented in Appendix F). In addition, the Proposed Action would also incorporate the following specific manatee protection recommendations provided by USFWS to:

- Restrict in-water work to the period from one half-hour after sunrise to one half-hour before sunset.
- Moor equipment and supply barges such that they do not represent a crushing hazard between barges or between a barge and the bottom of the waterway. Crushing hazards may be present when there is less than a four-foot clearance between barges, or between the bottom of the barge hull and the bottom of the waterway. Fenders providing a four-foot standoff at maximum compression may be used to address the crushing hazard between two barges. Barge load should be adjusted to water depth to provide the required amount of clearance.

Further, the Proposed Action is not located within an Important Manatee Area, Warm Water Aggregation Area, No Entry Area, or Area of Inadequate Protection. While the Proposed Action could possibly result in some minor impact to submerged aquatic vegetation, impacts would be considered insignificant. Therefore, based on current guidelines and the Effect Determination Key for the Manatee in Florida (USACE 2008), this project “may affect, but is not likely to adversely affect” the manatee. Consequently, no significant impacts with regard to manatees are expected to occur. USFWS provided concurrence with this determination on 6 February 2013 (see Appendix B).

### Wetlands

In accordance with Executive Order (EO) 11990, *Protection of Wetlands*, the USAF must demonstrate that there are no practicable alternatives to carrying out the Proposed Action in a wetland. EO 11990 applies to new construction and defines that term to include draining, dredging, channelizing, filling, diking,

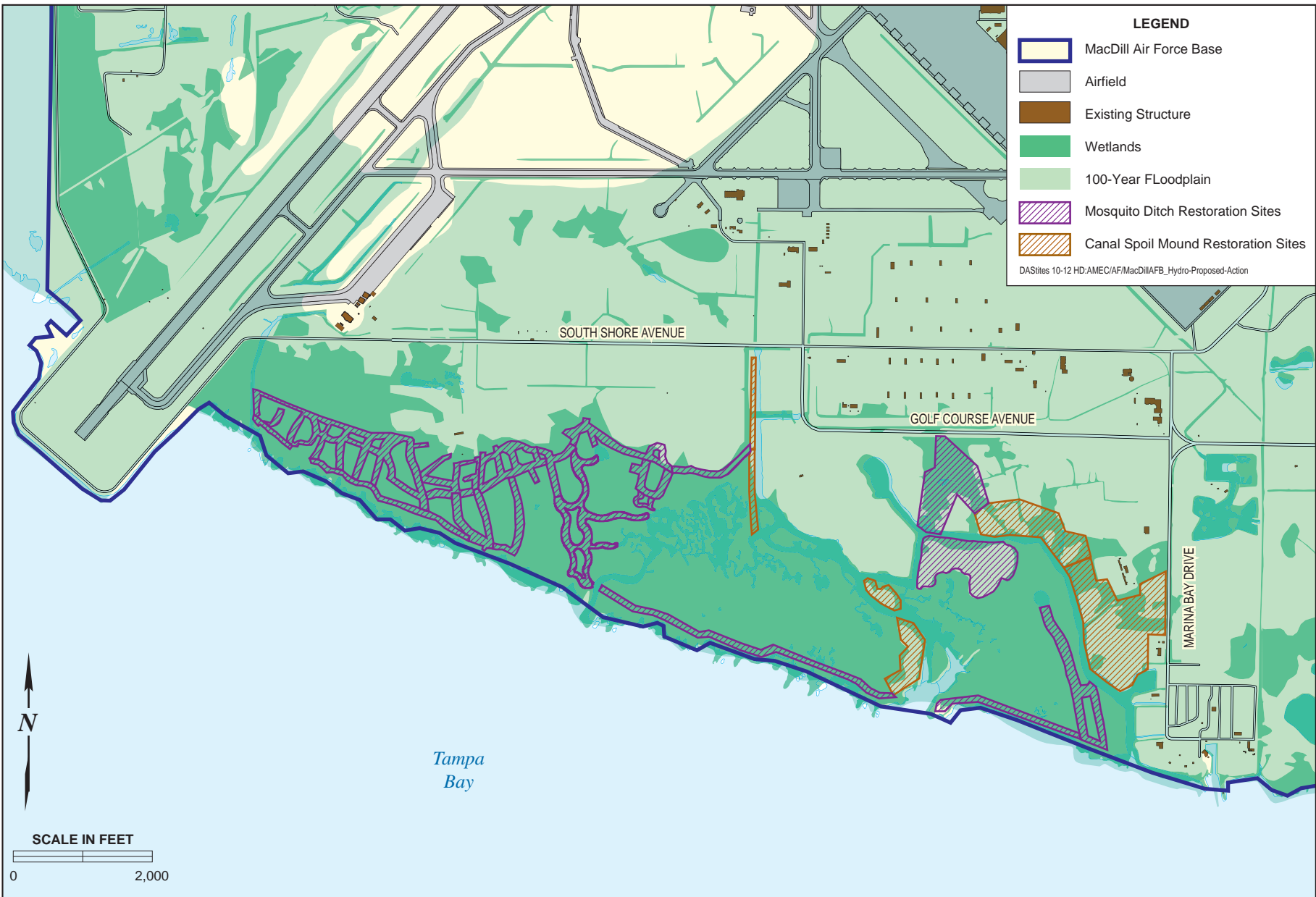


impounding, and related activities and any structures or facilities begun or authorized after the effective date of this Order (May 24, 1977).

Temporary impacts to wetlands under the Proposed Action would include disturbance to vegetation, limited dredging and filling activities, as well as construction of temporary access routes. In total, roughly 217 acres would be disturbed during restoration activities associated with the 25 individual restoration sites under the Proposed Action. A majority of each site is located in existing wetland areas with limited upland components (Figure 4-1). Construction methods for proposed restoration activities could include hydro-axe clearing of exotic vegetation; the use of backhoes, front end loaders, bulldozers and dump trucks to grade and remove fill; hydro-blasting to spread fill; and hand clearing where necessary. For all project activities, particular attention would be taken when developing BMPs for turbidity and erosion control methods to help limit temporary impacts to adjacent wetlands which are typically standard conditions of permits issued by Federal, state and local resource agencies. Silt fencing and floating turbidity barriers would be installed where appropriate to prevent offsite sedimentation. In areas where trenching for silt fencing would be detrimental to tree roots, staked hay bales may be necessary. All measures would remain in place in good working order until soils have stabilized sufficiently, after which all control measures would be removed. Native vegetation would be planted when required and maintained after restoration activities at each individual site and would include aquatic, emergent and transitional species. Given the nature of the Proposed Action, the planned sequences of projects over the next ten year, and incorporation of appropriate BMPs as typically required by permits issued by Federal, state and local resource agencies, the Proposed Action is expected to result in less than significant impacts to wetlands over the short-term.

Permanent wetland impacts are typically identified as any disturbance that affects the existing wetland soils. This disturbance can include placement of fill material within the wetland or excavation of existing wetland soils. The Mosquito Ditch Restoration Sites under the Proposed Action would restore the natural hydrology of the area and improve water quality, enhance and create wildlife habitat, control and remove exotic/nuisance species, and provide the

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.



EA

Hydrologic Resources and  
Proposed Project Locations

FIGURE  
4-1

opportunity to earn wetland mitigation credits for potential future use to offset mission impacts. Each restoration site would be designed for independent implementation and would be intended to work synergistically with one another to enhance existing wetland functions and create new wetland areas. For a majority of the Mosquito Ditch Restoration Sites, removal of upland soil mounds and filling of the historic mosquito ditches would help to enhance existing wetland areas by restoring the natural sheet flow of water within the inter-tidal wetlands. In the case of Restoration Sites 8 and 9, removal of the mosquito ditch spoil mounds would help to restore the natural sheet flow of fresh water across the upland southward to the mangrove wetlands. Consequently, implementation of the Proposed Action would result in a long-term benefit to wetlands due to a net gain of approximately 184 acres of enhanced or created wetlands on MacDill AFB when considering both the Mosquito Ditch and Canal Mound Restoration Sites together.

The Proposed Action is intended to restore estuarine wetland habitat to pre-disturbance conditions and, in doing so, would create wetland mitigation credits that could be used to offset future mission-critical development impacts at MacDill AFB. Potential wetland credits for each individual Mosquito Ditch Restoration Site of the Proposed Action would be determined during the permitting process for each project. In accordance with EO 11990, restoration of the wetland sites would involve coordination with the county (Environmental Protection Commission [EPC] of Hillsborough County), state (Southwest Florida Water Management District [SWFWMD]) and Federal (USACE) regulatory agencies. At a minimum, implementation of individual restoration sites would require application for an Environmental Resources Permit through the SWFWMD and USACE in accordance with Chapter 40D-400.439 Florida Administrative Code (FAC) and a Miscellaneous Activities in Wetlands permit through the EPC of Hillsborough County. Issuance of an Environmental Resource Permit also constitutes a water quality certification (or waiver) under Section 401 of the Clean Water Act (CWA) and a finding of consistency with the Florida Coastal Zone Management Program under Section 307 of the Coastal Zone Management Act (CZMA). Permit requirements would be identified on a site by site basis through coordination with SWFWMD and the EPC once the restoration site has been scheduled and funding has been secured.

A 404(b) Dredge and Fill determination would be required by the USACE and cannot be issued until the Environmental Resource Permit is approved, indicating issuance or waiver of water quality certification in accordance with Section 401 of the CWA and consistency with the CZMA. In addition, in accordance with Chapter 95-488, Laws of Florida, a Tampa Bay Marine Construction Permit is required to dredge, fill, build, or permanently moor any structure on submerged lands within the Port District.

Sites 8 and 15 of the proposed ecosystem restoration master plan sites are planned for implementation in FY13 and have been fully designed and permitted by the EPC, SWFWMD, and USACE (Appendix E). In association with the permitting process, MacDill AFB completed a functional assessment of the ecologic lift that would result from restoration of Sites 8 and 15 using the Unified Mitigation Assessment Method (UMAM). The UMAM functional assessments for Site 8 and 15 demonstrate that a net ecologic lift would be achieved for these sites following restoration.

The restoration of Sites 8 and 15 would include the restoration of 9.83-acres of historically impacted mangrove swamp and the creation of 0.85-acres of wetland from the upland spoil mounds. Based on the UMAM functional assessments for Sites 8 and 15, 1.76-units of functional gain would be achieved which would then be available to help offset future development at MacDill AFB. Further the USFWS has concurred that the net ecologic change calculated for Sites 8 and 15 can be considered reasonably representative to the ecologic improvement that would be expected for any of the projects included under the Proposed Action. Consequently, implementation of the Proposed Action is expected to result in a long-term benefit to wetlands overall and no significant adverse impacts to wetlands would occur.

#### 4.1.1.2 Canal Spoil Mound Restoration Sites

##### Vegetation

Impacts to vegetation for the Canal Spoil Mound Restoration Sites would be identical to those previously described for the Mosquito Ditch Restoration Sites. Given the intent of the Proposed Action to restore these habitats to their natural

function and plant community distribution and to remove exotic plant species, impacts to vegetation are expected to be less than significant and minor in the short-term and a moderate long-term benefit is anticipated to occur from proposed activities at the Canal Spoil Mound Restoration Sites under the Proposed Action.

### Wildlife

Impacts to wildlife at the Canal Spoil Mound Restoration Sites would be similar to those previously described for the Mosquito Ditch Restoration Sites. Short-term impacts to aquatic organisms that could result at the Canal Spoil Mound Restoration Sites would be slightly more severe given that proposed activities at the Canal Spoil Mound Restoration Sites would include excavation and potentially result in greater levels of disturbance to bottom sediments and increase nearby water turbidity during construction. However, as with the Mosquito Ditch Restoration Sites, implementation of BMPs including erosion and turbidity control structures would substantially reduce the amount and lateral extent of turbidity impacts to surface water, thereby reducing the impacts to aquatic life. Therefore, short-term impacts to aquatic life would still be considered minor and less than significant and no long-term significant impacts to aquatic life are anticipated.

As previously described for the Mosquito Ditch Restoration Sites, a negligible and less than significant short-term adverse impact may occur due to wildlife displacement during construction activities at the Canal Spoil Mound Restoration Sites and a moderate long-term benefit due to restoration of natural mangrove and wetland habitat is anticipated to occur.

### Sensitive Species

Impacts to sensitive species for the Canal Spoil Mound Restoration Sites would be similar to those previously described for the Mosquito Ditch Restoration Sites. Some listed avian species that use the waters off the mangrove swamp for feeding could be temporarily displaced during implementation of proposed activities at the Canal Spoil Mound Restoration Sites. This would constitute a minor, less than significant short-term impact to listed species on MacDill AFB.

Following construction, the Proposed Action is anticipated to have a minor long-term benefit for protected species and no long term significant adverse impacts.

As with proposed activities for the Mosquito Ditch Restoration Sites, the Canal Spoil Mound Restoration Sites are not located within an Important Manatee Area, Warm Water Aggregation Area, No Entry Area, or Area of Inadequate Protection and proposed activities would adhere to the Standard Manatee Conditions for In-Water Work (presented in Appendix F). Consequently, no significant impacts with regard to manatees are expected to occur.

### Wetlands

As previously described for the Mosquito Ditch Restoration Sites, proposed restoration activities would incorporate appropriate BMPs and impacts to wetlands are expected to be less than significant over the short-term. Proposed restoration activities for the Canal Spoil Mound Restoration Sites would include exotic plant removal and excavation of dredged spoil mounds to restore mangrove habitat and the natural sheet flow of tidal water through the area. Consequently, implementation of the Proposed Action would result in a long-term moderate benefit to wetlands due to a net gain of 184 acres of enhanced or created wetlands on MacDill AFB when considered in conjunction with the Mosquito Ditch Restoration Sites. Therefore, no significant adverse impacts with respect to wetlands are expected to occur.

As previously discussed for proposed activities for the Mosquito Ditch Restoration Sites, in accordance with EO 11990, activities at the Canal Spoil Mound Restoration Sites would involve coordination and permitting with all relevant Federal, state, and local resource agencies.

#### **4.1.2 No-Action Alternative**

Implementation of the No-Action Alternative would result in no changes to the existing vegetation, wildlife, or sensitive species occurring around MacDill AFB. Conditions would remain as described in Section 3.2, *Biological Resources*.

## **4.2 WATER RESOURCES**

Water resources at MacDill AFB consist of stormwater, and other surface waters, and groundwater. Potential impacts to these resources include erosion and siltation, and impacts to fish, wildlife and aquatic vegetation through degradation of water quality.

### **4.2.1 Proposed Action**

#### **4.2.1.1 Mosquito Ditch Restoration Sites**

##### Surface Water

The proposed activities at the Mosquito Ditch Restoration Sites would disturb bottom sediments and increase water turbidity and expose limited amounts of soil to potential erosion. The use of BMPs including erosion and turbidity control structures would substantially reduce the amount and lateral extent of turbidity impacts to surface water. Silt fencing and floating turbidity barriers would be installed where appropriate to prevent offsite sedimentation. In areas where trenching for silt fencing would be detrimental to tree roots, staked hay bales may be necessary. All measures would remain in place in good working order until soils have stabilized sufficiently, after which all control measures would be removed. Therefore, short-term impacts to surface water resources would be minimal and less than significant.

In the long-term, proposed activities at the Mosquito Ditch Restoration Sites are intended to restore the natural hydrology of the area, which would help to improve water quality around MacDill AFB and throughout Tampa Bay. The primary cause of disturbance to the Project Area has been hydrologic alteration, which has resulted in diminished fluctuations in salinity values. Freshwater sheet flow has been reduced in favor of drainage ditches, greatly diminishing the mingling of fresh and salt waters. In addition, tidal flushing has likewise been affected by the channelization caused by the ditches, resulting in areas that may not receive any saline flooding except during extreme weather events such as hurricanes. Removal of upland soil mounds and filling of the historic mosquito ditches would restore the natural sheet flow of fresh water from the upland through the inter-tidal wetlands and would also help to restore natural tidal



flushing. Therefore, moderate beneficial impacts to water resources would be expected and no significant adverse impacts would occur.

#### Groundwater

Activities associated with the Mosquito Ditch Restoration Sites would not result in any increase in impermeable surfaces and would not reduce local groundwater recharge capabilities. Consequently, the Proposed Action would not affect groundwater resources and no significant impact would occur.

#### Floodplain

Given the intent of the Proposed Action to enhance and restore intertidal wetlands at MacDill AFB, it would be impossible to avoid short-term construction activities within the 100-yr floodplain. However, implementation of the Proposed Action would not result in any increases in impermeable surfaces and would restore the natural hydrology and overall function of the ecosystem. Therefore, the Proposed Action may have a minor long-term benefit on the 100-year floodplain.

##### 4.2.1.2 Canal Spoil Mound Restoration Sites

Potential impacts associated with the Canal Spoil Mound Restoration Sites would be identical to those previously described for Mosquito Ditch Restoration Sites with respect groundwater and floodplains and no significant impacts would be expected. With respect to surface water quality, impacts associated with the Canal Spoil Mound Restoration Sites would be slightly more severe given that proposed activities would include excavation with heavy equipment and potentially result in greater levels of disturbance to bottom sediments and increase nearby water turbidity during construction. However, as with the Mosquito Ditch Restoration Sites, implementation of BMPs including erosion and turbidity control structures would substantially reduce the amount and lateral extent of turbidity impacts to surface water. Therefore, short-term impacts to surface water would still be considered minor and less than significant and no long-term significant impacts are anticipated.

#### **4.2.2 No-Action Alternative**

Under the No-Action Alternative, surface water, groundwater, and floodplains would remain unchanged from baseline conditions as described in Section 3.3, *Water Resources*. No impacts to water resources, adverse or otherwise, would occur.

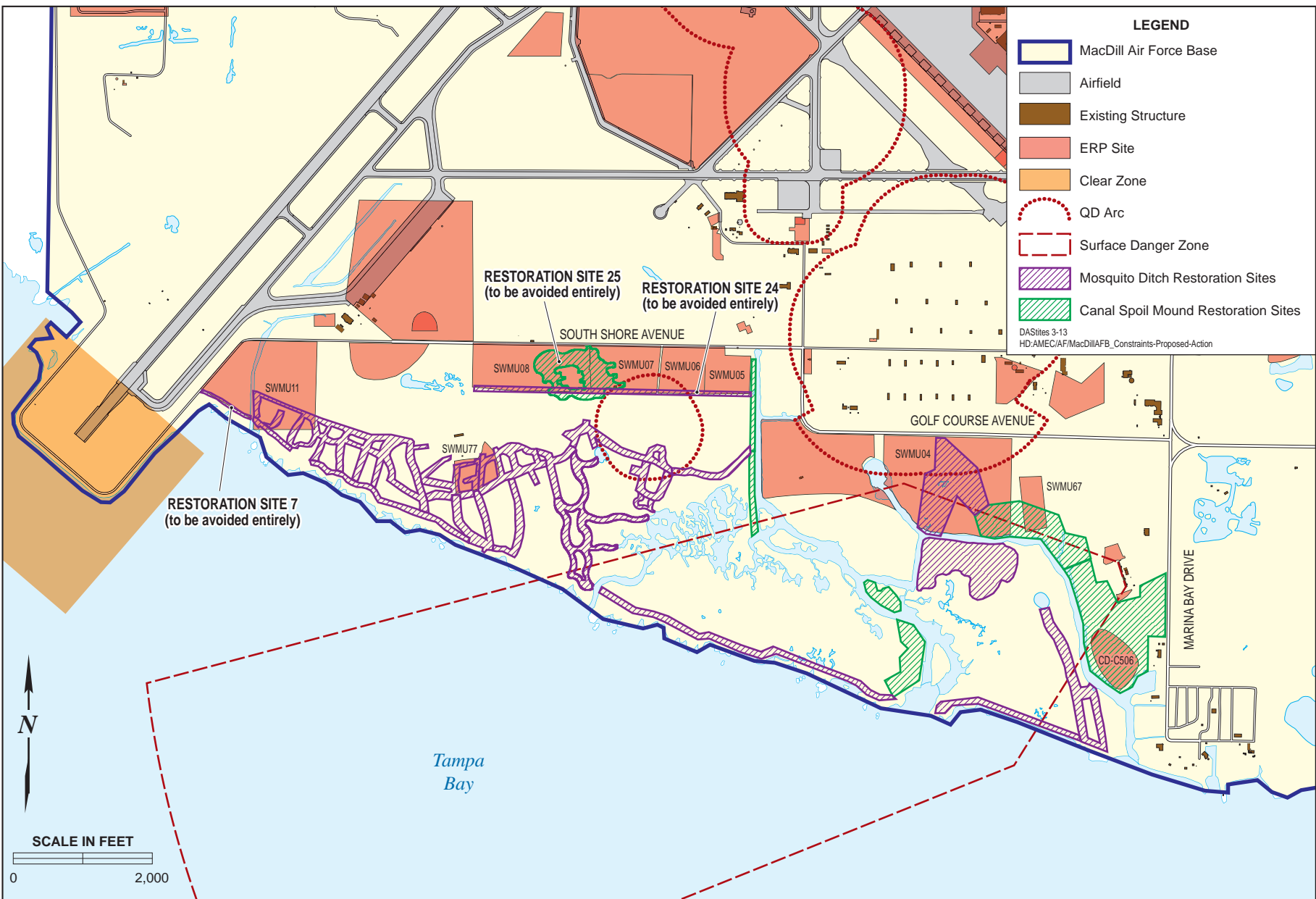
### **4.3 ENVIRONMENTAL RESTORATION PROGRAM**

#### **4.3.1 Proposed Action**

There are nine Environmental Restoration Program (ERP) sites located within the Project Area; that could be potentially disturbed during implementation of the Proposed Action (Figure 4-2). These nine ERP sites, and proposed Mosquito Ditch and Canal Spoil Mound Restoration Sites with a potential for disturbance, are summarized in Table 4-1, and further discussed below.

As described in Section 2.3, *Detailed Description of the Proposed Action*, given potential concerns associated with active ERP sites, the Proposed Action would avoid all ecosystem restoration activity planned within ERP sites that are still considered active or under long-term investigation. Therefore, proposed ecosystem restoration activities would be completely avoided at individual Sites 7, 24, and 25 and would be partially limited at individual Sites 6, 18-20, 22, and 23 until potential contamination and safety concerns have been alleviated and the respective ERP sites have been closed (refer to Figure 2-1 and Table 2-1).

The existing ERP sites include contaminated soils and/or groundwater, solid debris, and potentially buried chemical ordnance (refer to Section 3.4, *Environmental Restoration Program*). One site, Solid Waste Management Unit (SWMU) 04, has been approved for “No Further Action” status and is closed (FDEP 1998). The remaining eight ERP sites will generally require several years before natural degradation would remove the identified contamination. Approved remedies for these sites include groundwater use restrictions, ground and surface water monitoring, and land use controls.



Environmental Constraints and  
Proposed Project Locations

FIGURE  
4-2

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

**Table 4-1. Summary of ERP Sites within the Project Area**

ERP Site ID	Site Name	Description of Contaminants	Status	Restoration Site(s) with Potential to Disturb
SWMU04	Former Rubble Landfill	Site closed	NFRAP II	21 and 22
SWMU05	Landfill at Washrack	Benzo(a)pyrene equivalent	RA-O	11 (Site 24 eliminated from Proposed Action)
SWMU06	Landfill at EOD East	Iron, manganese	RA-O	24
SWMU07	Landfill at EOD West	Arsenic, iron, vinyl chloride	RA-O	n/a ( Sites 24 and 25 eliminated from Proposed Action)
SWMU08	Landfill West	Arsenic, benzene, iron, manganese, vanadium, vinyl chloride	RA-O	n/a ( Sites 24 and 25 eliminated from Proposed Action)
SWMU11	Former Chemical Munitions Landfill	Heavy metals, pesticides, and other chemical agents	RA-O	6, and 20 (Site 7 eliminated from Proposed Action)
SWMU67	Former Firing Range	Lead	LTM	22
SWMU77	Landfill at EOD South	Ordnance and munitions debris	LTM	18 and 19
CD-C506	Dredge Spoil Pile	Heavy metals, pesticides, and other chemical agents	Preliminary investigations only	23

NFRAP II - No Further Response Action Planned, Area Below Risk Screening Levels

RA-O - Remedial Action-Operation

LTM - Long-Term Management

Sources: FDEP 1998, MacDill AFB 2006; 2009; and 2010a thru e.

Individual restoration sites under the Proposed Action vary in size, complexity and construction costs, allowing planners to strategically choose projects based on appropriate needs and funding availability. It is anticipated that completion of the Proposed Action in its entirety would take over ten years, based on the budgeting history of similar projects. Although planned restoration activities at individual sites would be located in the vicinity or adjacent to identified ERP sites, project planning and coordination requirements included under the Proposed Action would not allow proposed activities in these areas to be conducted until they are deemed safe and/or compatible for further ecological

restoration and after appropriate coordination and in close consultation with ERP personnel at MacDill AFB (see Section 2.3.4, *Project Scheduling and Coordination*).

In the event that potentially contaminated soils or other safety hazards were discovered during restoration activities, all work would stop to allow appropriate personnel to characterize the material and/or safety concern and determine the appropriate response. Plans for future development in the areas of any of the ERP sites would take into consideration the possible restrictions and constraints that they represent. The FDEP regulates cleanup activities at petroleum sites, and has entered into a Petroleum Contamination Agreement with MacDill AFB. The investigation and cleanup of SWMUs is conducted in accordance with the Hazardous and Solid Waste Amendments permit issued to the base.

#### 4.3.1.1 Restoration Sites of Specific Concern

Although the Proposed Action would avoid all ecosystem restoration activity planned within ERP sites that are still considered active, Restoration Sites 6, 7, and 20 would be located adjacent to and/or in the vicinity of SWMU 11. SWMU 11 contains chemicals from the former chemical agent storage area that were reportedly buried between 1950 and 1955, including a 500-pound mustard gas bomb with a live explosive burster. Detailed documentation of the types or quantities of materials disposed at the landfill does not exist (MacDill AFB 2006; 2009; and 2010a-e). As with all Proposed Action activities located near or adjacent to active ERP sites on base, site-specific planning and appropriate coordination and approval with ERP personnel would be required prior to any project activities. Given the specific safety concerns associated with SWMU 11, if deemed necessary a site-specific survey for buried or unexploded ordnance could potentially be required which would be conducted prior to any construction activities adjacent Restoration Sites 6, 7, and 20. Therefore, no significant impact with respect to SWMU 11 is expected to occur.

Other sites included under the Proposed Action, including Restoration Sites 11, 18, 19, 22, and 23 would have similar potential impacts to ERP sites at MacDill AFB given they would also be located adjacent to and/or in the vicinity of active

ERP sites. However, given that the nature of the proposed restoration activities at these sites are less extensive and that contamination levels of the associated ERP sites are of less concern, potential impacts to ERP sites are expected to be less severe than those described for Restoration Sites 6, 7, and 20. In addition, the majority of Restoration Site 21 and portion of Restoration Site 22 would overlap with SWMU 04; however, SWMU 04 is officially closed and requires no further action. Therefore, proposed activities at Restoration Sites 21 and 22 within SWMU 04 would still be implemented under Proposed Action since no concerns with respect to ERP are expected to occur. The remaining restoration sites under the Proposed Action would have little to no potential impacts with respect to ERP sites at MacDill AFB and no significant impacts to ERP sites would occur.

Although project activities under the Proposed Action would not be conducted until appropriate consultation and coordination to determine that it is safe to conduct work nearby or adjacent to individual ERP sites are, the potential for encountering contaminated media during construction activities does exist. Consequently, the construction contractor would be required to prepare a site-specific Health and Safety Plan for each proposed restoration site that meets the requirements of 29 Code of Federal Regulations (CFR) 1910.120(b)(4). If contaminated media is encountered during construction, work would be stopped and the contaminated material would be removed by Occupational Safety and Health Administration (OSHA) Hazardous Waste Operator and Emergency Response 40-hour-certified workers and managed in accordance with ERP guidelines and in consultation with the MacDill ERP manager. Based on these considerations and previously discussed coordination and planning requirements for activities with known ERP sites, implementation of the Proposed Action is not expected to disturb or create contaminated sites resulting in adverse effects to human health or the environment nor result in conflicts with ongoing or proposed remedial activities at ERP sites. Therefore, impacts would be less than significant with respect to ERP sites at MacDill AFB.

#### **4.3.2 No-Action Alternative**

Under the No-Action Alternative, existing conditions with respect to ERP sites would remain unchanged from the conditions described in Section 3.4,

*Environmental Restoration Program.* Therefore, no impacts, adverse or otherwise, would be expected to occur.

#### **4.4 GEOLOGICAL RESOURCES**

##### **4.4.1 Proposed Action**

###### **4.4.1.1 Mosquito Ditch Restoration Sites**

The proposed activities at the Mosquito Ditch Restoration Sites would expose limited amounts of soil to potential erosion. The use of BMPs including erosion and turbidity control structures would substantially reduce the potential for erosion and siltation. Silt fencing and floating turbidity barriers would be installed where appropriate to prevent offsite sedimentation. In areas where trenching for silt fencing would be detrimental to tree roots, staked hay bales may be necessary. All measures would remain in place in good working order until soils have stabilized sufficiently, after which all control measures would be removed. Where required, native vegetation would be planted and maintained after restoration activities at each individual site, which would further help to limit potential erosion hazards. Therefore, short-term impacts to geological resources would be minimal and less than significant.

Under the Proposed Action, excavation of upland soil mounds and filling of the historic mosquito ditches would restore the natural sheet flow of fresh water from the upland through the inter-tidal wetlands and would also help to restore natural tidal flushing. These activities would not substantially alter local topography and would result in a landscape which more closely resembles pre-development conditions. In addition, the proposed activities at the Mosquito Ditch Restoration Sites would not include the development of any facilities and consequently would not expose people or structures to major geological hazards. Therefore, no significant long-term impacts are expected and proposed activities at the Mosquito Ditch Restoration Sites would result moderate beneficial impacts since the Proposed Action is intended to help enhance and restore intertidal wetland areas and associated soils.

#### 4.4.1.2 Canal Spoil Mound Restoration Sites

Potential impacts to geological resources associated with the Canal Spoil Mound Restoration Sites would be similar but slightly more severe given that proposed activities would include excavation of dredged spoil mounds with heavy equipment to restore natural sheet flow of tidal water through the area through and regrading to mimic predevelopment hydrologic regimes. However, as with the Mosquito Ditch Restoration Sites, implementation of BMPs including erosion and turbidity control structures would substantially reduce the potential for erosion and siltation. As with the Mosquito Ditch Restoration Sites, proposed activities at the Canal Spoil Mound Restoration Sites would not include the development of any facilities and consequently would not expose people or structures to major geological hazards. Therefore, no significant adverse impacts to geological resources are expected to occur.

#### 4.4.2 No-Action Alternative

Under the No-Action Alternative, existing conditions with respect to geological resources would remain unchanged from the conditions described in Section 3.5, *Geological Resources*. Therefore, no impacts, adverse or otherwise, would be expected to occur.

### 4.5 SAFETY

#### 4.5.1 Proposed Action

##### Bird-Aircraft Strike Hazard (BASH)

MacDill AFB has a BASH plan that provides guidance for reducing the incidents of bird strikes in and around areas where flying operations occur. The primary BASH control method is manipulation of the environment to reduce attractiveness to BASH threats. Additionally, BASH control techniques to disperse wildlife, including birds, from the airfield give short-term relief from an immediate safety hazard. The Proposed Action has been developed with BASH minimization in mind. Although restoration activities under the Proposed Action would generally increase the use of the area by avian species, no open water habitats or foraging areas which may attract birds have been proposed



within 3,000 feet of the runway. Further, other project sites which would create or enhance bird foraging habitat have been also proposed well outside of the immediate danger zones to help entice birds further away from the airfield. Consequently, implementation of the Proposed Action would not increase BASH potential at MacDill AFB or conflict with established BASH control techniques. Therefore, impacts to BASH are expected to be minor and less than significant.

### Safety Zones

The Mosquito Ditch and Canal Spoil Mound Restoration Sites would not be located within or impact the Accident Potential Zones or Clear Zones at the southern end of Runway 04/22, which are primarily located over Tampa Bay, and a narrow strip of land constructed around the runway. Therefore, implementation of the Proposed Action would not result in any significant impacts to Accident Potential Zones or Clear Zones.

Some individual restoration sites included in the Proposed Action would be located within portions of two established explosives safety quantity-distance (ESQD) arcs at MacDill AFB (refer to Figure 4-2). The ESQD arc located within the north central portion of the Project Area is associated with an Explosive Ordnance Disposal (EOD) area. The EOD area is used to detonate unserviceable ordnance to support the military mission and for training purposes. Restoration Sites 8, 9, and 15 would be partially located within or adjacent to the ESQD arc associated with the EOD range. The other ESQD arc located within the north east portion of the Project Area is associated with the munitions storage area. Restoration Site 21 would be partially located within this ESQD arc. For proposed activities at these restoration sites located within or adjacent to ESQD arcs, careful planning with base security and EOD staff would be conducted in accordance with standard safety procedures. Contractors and base personnel would coordinate all activities to minimize risks and develop contingency plans. In addition, portions of the Proposed Action would be located within the Surface Danger Zone (SDZ) associated with the small arms range immediately to the east of the Project Area, including Restoration Sites 1, 2, 12, 13, 14, 21, 22, and 23. Implementation of project activities at these restoration sites would require specific attention to scheduling and coordination during construction activities to ensure the safety of work crews. Careful coordination with base security and

Combat Arms Training and Maintenance would be required for any activities in this zone to ensure safety and to secure proper waivers for construction personnel. Consequently, with proper coordination and scheduling with appropriate personnel, impacts with respect to ESQD arcs and SDZs would be minor and less than significant in the short-term. Once completed, the Proposed Action would not result in any impacts to established safety zones.

#### Occupational Health and Safety

The Proposed Action would pose safety hazards to the workers similar to those associated with typical construction projects, such as falls, slips, heat stress, and machinery injuries. Potentially hazardous activities would be closely coordinated within established ESQD arcs and the SDZ associated with the small arms range. Further, Construction methods would comply with OSHA requirements to ensure the protection of workers and the general public during construction. Given the remote and restricted nature of the proposed restoration sites and the dense vegetation of the area, public access to the Project Area is not available.

As discussed in Section 4.5, *Environmental Restoration Program*, if contaminated media is encountered during construction, work would be stopped and the contaminated material would be removed by OSHA Hazardous Waste Operator and Emergency Response 40-hour-certified workers and managed in accordance with ERP guidelines. Implementation of this work approach would dramatically reduce the potential for impacts to worker health and safety. Consequently, impacts to occupational health and safety with implementation of the Proposed Action would be less than significant.

#### **4.5.2 No-Action Alternative**

Under the No-Action Alternative, existing conditions with respect to safety would remain unchanged from the conditions described in Section 3.6, *Safety*. Therefore, no impacts, adverse or otherwise, would be expected to occur.

## 4.6 AIR QUALITY

### 4.6.1 Proposed Action

#### Fugitive Dust

Air quality impacts would occur during construction (i.e., earth moving, excavation, filling) of the mangrove wetland restoration program for all types of proposed restoration activities; however, these air quality impacts would be minor and temporary in nature. Construction methods could include hydro-axe for clearing of exotic vegetation; the use of backhoes, front end loaders, bulldozers and dump trucks to grade and remove fill; hydro-blasting to spread fill; and hand clearing where necessary. Fugitive dust (particulate matter) and construction vehicle exhaust emissions would be generated by (1) equipment operation; and (2) entrainment of dust particles by the action of the wind on exposed soil surfaces and debris. The quantity of fugitive dust emissions from the construction (and demolition) site is proportional to the land disturbed and the level of construction activity, as well as the nature of the soils.

Although the exact scheduling of individual restoration sites is uncertain at this time, it is anticipated that completion of the Proposed Action in its originally planned entirety (217.44 acres) would take over ten years, based on the budgeting history of similar projects. For the purposes of this EA, fugitive dust emissions have been calculated based on the assumption that an average of approximately 21.7 acres of land would be disturbed in any given year as a worst case scenario. In addition, although activities proposed for the Mosquito Ditch Restoration Sites would generally result in less severe ground disturbance and use of heavy machinery than the Canal Spoil Mound Restoration Sites, fugitive dust emissions for all 25 planned restoration sites were calculated using the same conservatively high emission factors and assumption. Consequently, fugitive dust emissions are estimated to average approximately 30.89 tons per year (tpy) over the life of the Proposed Action (refer to Appendix I for a full list of emission factors and assumptions). Actual fugitive dust emissions are anticipated to be less than the estimation, due to the damp or wet nature of soils in the project area. Soils that are wet or damp are less prone to become airborne and result in

fugitive dust emissions. Equipment travelling over temporary roads would also generate dust that would fall rapidly within a short distance from the source.

Chapter 62-296.320(4)(c), FAC, requires that no person shall allow the emissions of unconfined particulate matter from any activity (including vehicular movement, transportation of materials, construction, demolition, or wrecking, etc.) without taking reasonable precautions to prevent such emissions. Reasonable precautions include:

- Paving and maintenance of roads, parking areas, and yards;
- Applications of water or chemicals (foam) to control emissions from activities such as demolition, grading roads, construction, and land clearing;
- Application of asphalt, water, or other dust suppressants to unpaved roads, yards, open stock piles, and similar areas;
- Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent reentrainment, and from building or work areas to prevent particulates from becoming airborne; and
- Landscaping or planting of vegetation.

### Combustion Emissions

Pollutants from construction equipment and vehicle engine exhausts include NO<sub>x</sub>, CO, PM<sub>10</sub>, PM<sub>2.5</sub>, and VOCs. Internal combustion engine exhausts would be temporary and, like fugitive dust emissions, would not result in long-term impacts.

Throughout construction there would be a minimum of a 500-foot buffer between the construction activity and closest receptors for all Restoration Sites, except for Restoration Sites 1 and 23. Within these sites, construction would occur adjacent to the marina, trailer park, and beach utilized for recreation. Emissions from the use of construction equipment would be short-term and occur in low concentrations due to the limited use of heavy equipment. In addition, the open-air nature of the project vicinity would eliminate the potential for the concentration of harmful air pollutants to hazardous levels.

In order to evaluate the air emissions and their impact to the overall region, the emissions associated with Proposed Action activities were compared to the total emissions on a pollutant-by-pollutant basis for the Hillsborough County's 2008 inventory data, as presented in Section 3.7.2. Since Hillsborough County is in a non-attainment area for Pb, significant impacts to air quality would occur if the total emissions of Pb from project implementation exceed 25 tpy. Pollutant emission estimates for both phases of the Proposed Action are presented in Appendix I and summarized in Table 4-2.

As shown in Table 4-2, the Proposed Action would generate emissions well below 10 percent of the emissions inventory for Hillsborough County and are below the conformity rates as stated in 40 CFR 93.153(b). In addition, the emissions would be short-term in nature. Further, although activities proposed for the Mosquito Ditch Restoration Sites would generally not require the use of heavy machinery combustion emissions for restoration sites were calculated using the same conservatively high emission factors and assumptions. Therefore, no significant impact on regional or local air quality would result from implementation of the Proposed Action.

**Table 4-2. Proposed Action Air Emissions at MacDill AFB**

Pollutant	Proposed Action Annual Emissions (tpy)	Hillsborough County Emissions Inventory <sup>a</sup> (tpy)	Project Percentage of Hillsborough County Emissions (%)	Conformity Rate <sup>b</sup> (tpy)	Above/ Below Rate
CO	8.71	200,190	0.0391	100	Below
VOC	1.31	35,785	0.0037	100	Below
NO <sub>x</sub>	22.04	56,368	0.0044	100	Below
SO <sub>x</sub>	0.44	19,084	0.0023	100	Below
PM <sub>10</sub> <sup>b</sup>	16.78	89,400	0.0188	100	Below
PM <sub>2.5</sub>	2.8	89,400	0.0032	100	Below
Pb	Negligible <sup>c</sup>	57	~0.0000	25	Below

<sup>a</sup> Based on stationary emissions presented in Table 3.1.2.

<sup>b</sup> Source: 40 CFR 93.153, November 30, 1993.

<sup>c</sup> Pb emissions from combustion associated with the limited construction equipment usage would be negligible. Pb emissions in significant quantities are typically associated only with major industrial operations and/or the burning of coal.

tpy - tons per year

% - Percent

### Operational Emissions

Upon completion of construction, operational emissions associated with restoration sites under the Proposed Action would be less than significant. Negligible additional emissions would occur associated with limited maintenance and invasive species removal; however, the project would result in high functioning wetland habitat, which would serve to filter some types of air pollutants (refer to Greenhouse Gas Emissions [GHG] discussion, below).

### Greenhouse Gas Emissions

The construction and operational phases of the Proposed Action would include combustion of fossil fuels during construction, thereby leading to a potential increase in GHG emissions. The CEQ recommended in a Draft Guidance that emissions equal to or greater than 25,000 metric tons annually should be included in NEPA assessments. Given the limited number and size of construction vehicles and equipment that would be used for the Proposed Action, GHG emissions resulting from the limited use of fossil fuel combustion during the construction phase of the Proposed Action would be negligible and would not approach 25,000 metric tons of green house gases. The proposed wetland habitat restoration would have no long-term operational emissions of GHGs. Consequently, the Proposed Action is expected to have less than significant impacts to GHGs.

### General Conformity

Emissions resulting from implementation of the Proposed Action would be negligible as emissions would not exceed 25 tpy for Pb or 100 tpy for all other criteria pollutants and/or 10 percent of its regional emission inventory. Therefore, impacts to air quality resulting from implementation of the Proposed Action would be less than significant.

#### **4.6.2 No Action Alternative**

Under the No-Action Alternative, air quality conditions would remain unchanged from baseline conditions as described in Section 3.7, Air Quality. No impacts to air quality, adverse or otherwise, would occur.

#### **4.7 INDIRECT AND CUMULATIVE IMPACTS**

Reasonably foreseeable future projects occurring concurrently elsewhere on base include, but are not limited to, projects identified and included in Appendix G, *Cumulative Project Tables* (MacDill AFB 2012). All of the listed projects will have short-term impacts during construction, and most will have beneficial, long-term effects following construction. A summary of the anticipated cumulative impacts relative to the Proposed Action and Alternative are presented below. These discussions are presented for each of the resources described previously.

##### **4.7.1 Biological Resources**

The significance threshold for wildlife and aquatic resources would include a substantial reduction in ecological process, communities, or populations that would threaten the long-term viability of a species or result in the substantial loss of a sensitive community that could not be off-set or otherwise compensated. It is not anticipated that implementation of the Proposed Action and the other identified projects elsewhere on base would result in the incremental loss of valuable habitat. The intent of the Proposed Action is to enhance biological resources. Other projects throughout the base are proposed in previously developed areas and would not occur in sensitive habitat areas. Coordination with the county, state, and Federal regulatory agencies would be completed to ensure that no environmental issues are overlooked for each cumulative project. No significant adverse cumulative impacts on biological resources are predicted, and in fact, beneficial cumulative impacts on biological resources would be expected from enhancement and creation of intertidal wetlands and natural habitats. In addition, the Proposed Action would also create wetland credits, which could be used to offset unavoidable wetland impacts from future projects.

#### **4.7.2 Water Resources**

The significance threshold for water resources includes any action that substantially depletes surface water supplies, substantially alters drainage patterns, or results in the loss of Waters of the U.S. that cannot be compensated. None of the proposed construction projects and the other identified projects throughout the base would create direct discharges to surface waters. The projects have stormwater provisions included in design and construction, where necessary, and would tie into existing stormwater controls that are sufficient to meet the proposed increase in demand. There would be a minor beneficial impact to water resources as there would be an increase in retention area, and/or a corresponding decrease in direct discharges to Hillsborough Bay waters. The Proposed Action, as well as other proposed projects at the base, is intended to restore the natural hydrology of the area, which would help to improve water quality around MacDill AFB and throughout Tampa Bay. Therefore, no significant adverse cumulative impacts would occur and beneficial cumulative impacts on stormwater would be expected.

#### **4.7.3 Environmental Restoration Program**

As described in Section 2.3, *Detailed Description of the Proposed Action*, the Proposed Action would avoid all ecosystem restoration activities planned within ERP sites that are still considered active or under long-term investigation. Although some of the restoration sites under the Proposed Action would still be located adjacent to or in the vicinity of identified ERP sites, proposed activities in these areas would not be conducted until they are deemed safe through appropriate coordination and consultation with the MacDill AFB ERP and the FDEP. With proper consultation and coordination as, the Proposed Action is not expected to disturb or create contaminated sites resulting in adverse effects to human health or the environment nor result in conflicts with ongoing or proposed remedial activities at ERP sites. Therefore, impacts to ERP would be less than significant with respect to the Proposed Action's addition to cumulative projects.



#### **4.7.4 Geology**

Short-term impacts that would result from implementation of the Proposed Action include exposure of limited amounts of soil to potential erosion. The use of BMPs including erosion and turbidity control structures would substantially reduce the potential for erosion and siltation. Silt fencing and floating turbidity barriers would be installed where appropriate to prevent offsite sedimentation. In areas where trenching for silt fencing would be detrimental to tree roots, staked hay bales may be necessary. For the construction projects occurring elsewhere throughout the base, the grading and excavating of soils and removal of geotechnically incompatible soils for construction site preparation would affect geological resources but the majority of these sites have been previously developed. Some construction projects would occur simultaneously, but in different areas of the installation; these projects would also be spread out over several years. MacDill AFB would ensure that BMPs are employed during these activities to minimize effect on soil and prevent erosion and sediment runoff as typically required by permits issued by Federal, state and local resource agencies. All activities would comply with the installation's surface water management plan and would employ erosion-control techniques, such as silt fencing and sediment traps. In addition, MacDill AFB would revegetate, according to the current landscape management plan, which helps with erosion control and soil stability. Grading, excavation, and recontouring of soil materials would adhere to all Federal, state, and local regulations. No significant adverse cumulative impacts on geological resources or soils are expected.

#### **4.7.5 Safety**

Construction activities associated with the Proposed Action as well as construction and demolition activities associated with the other identified cumulative projects on base are not expected to increase safety risks or BASH levels. Construction and demolition activities would be accomplished in accordance with Federal, state, and local regulations to minimize general construction hazards as well as those associated with hazardous materials, wastes, and substances. Further, no identified projects would interfere with BASH control methods on base or result in increased threat levels for bird strikes. The Proposed Action and some of the other identified projects would

involve construction activities near or adjacent to ERP site boundaries but would generally not involve excavations that would likely encounter contaminated soil or groundwater and would comply with OSHA requirements to ensure the protection of workers and the general public during construction. Consequently, no significant adverse cumulative impacts to safety or occupational health would be expected.

#### 4.7.6 Summary of Cumulative Impacts

When the Proposed Action or Alternative to the Proposed Action is considered in conjunction with past, present, or reasonably foreseeable actions, no significant cumulative impacts would be expected on any resource area.

### 4.8 COMPARISON OF THE ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION AND ALTERNATIVES

Table 4-3 includes a summary of the potential environmental impacts of the Proposed Action and the No Action Alternative.

**Table 4-3. Comparison of Environmental Consequences**

Environmental Resources	Proposed Action	No Action Alternative
Biological Resources	Short-term - Minor Adverse Long-term - Moderate Benefit	Short-term - No Impact Long-term - No Impact
Water Resources	Short-term - Minor Adverse Long-term - Moderate Benefit	Short-term - No Impact Long-term - No Impact
Environmental Restoration Program	Short-term - Minor Adverse Long-term - No Impact	Short-term - No Impact Long-term - No Impact
Geological Resources	Short-term - Minor Adverse Long-term - Moderate Benefit	Short-term - No Impact Long-term - No Impact
Safety	Short-term - No Impact Long-term - No Impact	Short-term - No Impact Long-term - No Impact
Air Quality	Short-term - Minor Adverse Long-term - No Impact	Short-term - No Impact Long-term - No Impact
Indirect and Cumulative Impacts	Short-term - No Impact Long-term - No Impact	Short-term - No Impact Long-term - No Impact

## **4.9 OTHER NEPA CONSIDERATIONS**

This section provides a discussion of other pertinent NEPA considerations associated with the Proposed Action.

### **4.9.1 Unavoidable Adverse Impacts**

There are no significant unavoidable adverse impacts associated with the Proposed Action or No Action Alternative.

### **4.9.2 Relationship between Short-Term Uses and Enhancement of Long-Term Productivity**

Implementation of the Proposed Action would have a positive effect on long-term productivity and would be consistent with the purpose of MacDill AFB's Integrated Natural Resource Management Plan (INRMP): to integrate the Air Force mission with an interdisciplinary approach to ecosystem management to ensure that MacDill AFB continues to support present and future mission requirements while preserving, improving, and enhancing ecosystem integrity. Goals of the INRMP include the improvement of natural resources that have the capability to support existing and future military missions, the protection and improved recovery of threatened, endangered or special concern species, and protection of the quality of water, both surface water and groundwater, at MacDill AFB. Implementation of the Proposed Action provides ecosystem preservation, improvement, and enhancement measures required to effectively complete mission goals. Implementation of the Alternative to the Proposed Action similarly provides ecosystem benefits on a regional level, although it does not directly support MacDill's INRMP by improving the land that has been entrusted to the Department of Defense. The No Action Alternative would not result in long-term ecological benefits.

### **4.9.3 Irreversible and Irretrievable Commitment of Resources**

The Proposed Action would irreversibly commit fuels, manpower, materials, and costs required to complete the proposed scope of work. The No Action Alternative would not commit any additional resources.

**SECTION 5**  
**PERSONS CONTACTED**

Andy Rider	6 CES/CEVW 7621 Hillsborough Loop Drive MacDill AFB, FL 33621 813-828-2178
Jason Kirkpatrick	6 CES/CEVN 7621 Hillsborough Loop Drive MacDill AFB, FL 33621 813-828-0459
Patricia Matty	6 CES/CEVR MacDill AFB, FL 33621 813-828-4554
Kristy Snyder	6 CES/CEVR MacDill AFB, FL 33621 813-828-0789
Charles Schnepel	US Army Corps of Engineers Jacksonville Regulatory Division, Tampa Section 10117 Princess Palm Avenue, Suite 120 Tampa, FL 33610-8300
Scott Edwards	Division of Historical Resources Compliance Review Section 500 S. Bronough Street Tallahassee, FL 32399-0250
Mark Sramek	NOAA's National Marine Fisheries Service Southeast Region, Habitat Conservation Division 263 13 <sup>th</sup> Avenue South St. Petersburg, FL 33701-5505
Dave Hankla	US Fish and Wildlife Service 7915 Baymeadows Way, Suite 200 Jacksonville, Florida 32256-7517 904-731-3203



## SECTION 6

### LIST OF PREPARERS

This report was prepared for, and under the direction of, the U.S. Air Force by AMEC Environment & Infrastructure, Inc. Members of the professional staff are listed below:

#### Project Management

Aaron Goldschmidt, Environmental Program Manager  
*M.A. Geography*

Sharon Crowland, QA/QC  
*M.A. Public Administration*

Andrew Chen, Project Manager  
*B.A. Environmental Studies*

#### Technical Analysts

Ben Botkin  
*B.A. Environmental Studies*

Nick Meisinger  
*B.S. Environmental Studies*

#### Production

Janice Depew  
*Production*

Deirdre Stites  
*Graphic Artist*



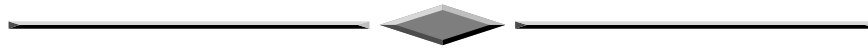
## SECTION 7

### REFERENCES

Federal Aviation Administration 2007.	<i>Advisory Circular, Hazardous Wildlife Attractants on or Near Airports.</i> August.
Florida Department of Environmental Protection 1998	Letter Report: No Further Action Request for SWMU 04, MacDill Air Force Base, Florida. 30 January.
Federal Interagency Committee on Urban Noise (FICUN). 1980.	Guidelines for Considering Noise in Land Use Planning Control. US Department of Transportation and Federal Housing Administration. June.
Natural Resource Conservation Service (NRCS) 2012	Web Soil Survey. Available at: <a href="http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm">http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm</a> . Accessed 19 March 2012.
MacDill AFB 2006	Site Summary for SWMU11. Environmental Restoration Program: Chemical Munitions Burial Site. 10 May.
MacDill AFB 2009	Site Summary for SWMU67. Environmental Restoration Program: Former Firing Range. 14 January.
MacDill AFB 2010a	Site Summary for SWMU05. Environmental Restoration Program: Former Landfill at Washrack. 28 July.
MacDill AFB 2010b	Site Summary for SWMU06. Environmental Restoration Program: Former Landfill at EOD East. 28 July.
MacDill AFB 2010c	Site Summary for SWMU07. Environmental Restoration Program: Former Landfill at EOD West. 28 July.
MacDill AFB 2010d	Site Summary for SWMU08. Environmental Restoration Program: Former Landfill West. 20 July.
MacDill AFB 2010e	Site Summary for SWMU77. Environmental Restoration Program: Former Landfill at EOD South. 28 July.

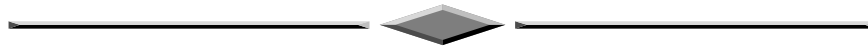


MacDill AFB 2011	Resource Conservation and Recovery Act Facility Investigation Work Plan: Site C506 Dredge Spoil Pile. MacDill AFB. January.
MacDill AFB 2012	Personal communication with Mr. Jason Kirkpatrick, 6 CES/CEVN, on 3 March 2012.
Southeast Regional Climate Center 2012	Historical Climate Summaries: St. Petersburg, FL. Available at: <a href="http://www.sercc.com/cgi-bin/sercc/cliMAIN.pl?fl7886">http://www.sercc.com/cgi-bin/sercc/cliMAIN.pl?fl7886</a> . Accessed: 19 May 2012.
USEPA 2008	Air Emission Sources: Hillsborough County. Available at: <a href="http://www.epa.gov/air/emissions/index.htm">http://www.epa.gov/air/emissions/index.htm</a> . Accessed 24 May 2012.
USEPA 2012	USEPA 2012. The Green Book Nonattainment Areas for Criteria Pollutants: Hillsborough County. Available at: <a href="http://www.epa.gov/air/oaqps/greenbk/index.html">http://www.epa.gov/air/oaqps/greenbk/index.html</a> . Accessed 12 May 2012.
USAF 2005	Final Endangered Species Population Survey, performed by University of South Florida. MacDill AFB, Florida. 31 January.
USAF 2006	Integrated Cultural Resources Management Plan. Fiscal Year 2006-2010. MacDill AFB, Florida. September.
USAF 2007	Ecosystem Restoration Conceptual Masterplan. MacDill AFB, Florida. July.
USAF 2010	Integrated Natural Resources Management Plan, 2010-2014. MacDill AFB, Florida.
USAF 2011	Environmental Assessment for Construct Marine Habitat Wave Barrier Project. MacDill AFB, Florida. Draft Final. October.
Windfinder 2012.	<i>Wind &amp; Weather Statistic MacDill Air Force Base.</i> Available at: <a href="http://www.windfinder.com/windstats/windstatistic_macdill_airforce_base.htm">http://www.windfinder.com/windstats/windstatistic_macdill_airforce_base.htm</a> . Accessed on: 19 May 2012.



## **APPENDIX A**

# **COASTAL MANAGEMENT PROGRAM CONSISTENCY STATEMENT**





## APPENDIX A

### CONSISTENCY STATEMENT

This consistency statement will examine the potential environmental consequences of the Proposed Action and ascertain the extent to which the consequences of the Proposed Action are consistent with the objectives of Florida Coastal Management Program (CMP).

Of the Florida Statutory Authorities included in the CMP, impacts in the following areas are addressed in the Environmental Assessment (EA): beach and shore preservation (Chapter 161), historic preservation (Chapter 267), economic development and tourism (Chapter 288), saltwater living resources (Chapter 370), living land and freshwater resource (Chapter 372), water resources (Chapter 373), environmental control (Chapter 403), and soil and water conservation (Chapter 582). This consistency statement discusses how the proposed options may meet the CMP objectives.

### CONSISTENCY DETERMINATION

#### **Chapter 161: Beach and Shore Preservation**

The Proposed Action involves a multi-phase, multi-year mangrove wetland restoration program described in the *Ecosystem Restoration Conceptual Masterplan* that would restore the natural hydrology and enhance and create wildlife habitat at MacDill Air Force Base (AFB). The Alternative Action would involve the purchase of wetlands mitigation credits from a permitted mitigation bank within the Tampa Bay Basin. Therefore, by nature of the Proposed Action and Alternative Action, long-term adverse impacts on the beach and/or shoreline will not occur, and rather, conditions would improve. Short-term impacts due to the increased sedimentation into the bay as a result of construction are expected to be very minor, and will be minimized by the development of a Storm Water Pollution Prevention Plan (SWPPP) and implementation of best management practices (BMPs) for erosion and sedimentation control, as appropriate.

## **Chapter 267: Historic Preservation**

The Air Force and the Florida State Historic Preservation Officer have determined that the Proposed Action and Alternative Action will have no effect on historic properties associated with MacDill AFB.

## **Chapter 288: Economic Development and Tourism**

The EA presents the new employment impact and net income impact of the Proposed Action and Alternative Action. Proposed Action construction would be projected to cost less than 0.07 percent of the nearly \$1.2 billion annual expenditures that MacDill AFB provides to the local economy, and would therefore constitute a negligible beneficial impact on the work force in the region during the construction period. The options would not have significant adverse effects on any key Florida industries or economic diversification efforts.

## **Chapter 370: Saltwater Living Resources**

The EA addresses potential impacts to local water bodies. Water quality impacts from the Proposed Action and Alternative Action were considered. Results indicate that no significant impacts would result from the Proposed Action or Alternative Action. The intent of the Proposed Action and Alternative Action is to enhance wetland and estuarine habitat, therefore the Air Force anticipates a beneficial effect to saltwater living resources.

## **Chapter 372: Living Land and Freshwater Resources**

Threatened and endangered species, major plant communities, conservation of native habitat, and mitigation of potential impacts to the resources are addressed in the EA. The Proposed Action and Alternative Action would not result in permanent disturbance to native habitat and should not significantly impact threatened or endangered species.

## **Chapter 373: Water Resources**

There would be less than significant impacts to surface water or groundwater quality under the Proposed Action or Alternative Action as discussed in the EA.

A beneficial effect to surface water quality is expected as the Proposed Action and Alternative to the Proposed Action are intended to expand mangrove habitat. The Proposed Action would restore the natural hydrology of the project area by eliminating the channelization that allows for the southward sheetflow of freshwater runoff across the area. Similarly, protected species habitat and marine productivity are anticipated to be beneficially affected by the Proposed Action and Alternative to the Proposed Action.

Under Part IV of Chapter 373, the Department of Environmental Protection, water management districts, and delegated local governments review and take agency action on wetland resource, environmental resource, and stormwater permit applications for work in, on, and over wetlands and other surface waters. Since the Proposed Action and Alternative to the Proposed Action would alter surface water flows and require construction within wetlands, an Environmental Resource Permit is applicable.

#### **Chapter 403: Environmental Control**

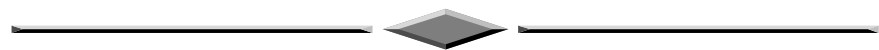
The EA addresses the issues of conservation and protection of environmentally sensitive living resources; protection of groundwater and surface water quality and quantity; potable water supply; protection of air quality; minimization of adverse hydrogeologic impacts; protection of endangered or threatened species; solid, sanitary, and hazardous waste disposal; and protection of floodplains and wetlands. No significant impacts to these resources were identified; however, should potential mitigation measures be deemed necessary they would be incorporated. Implementation of mitigation would be, for the most part, the responsibility of MacDill AFB.

#### **Chapter 582: Soil and Water Conservation**

The EA addresses the potential of the Proposed Action and Alternative Action to disturb soil and presents possible BMPs to prevent or minimize soil erosion. Impacts to groundwater and surface water resources also are discussed in the EA.

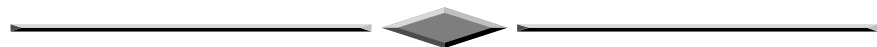
## CONCLUSION

The Air Force finds that the conceptual Proposed Action and Alternative Action plans presented in the EA are consistent with Florida's CMP.



## **APPENDIX B**

### **PUBLIC NOTICE AND AGENCY COORDINATION**









**DEPARTMENT OF THE AIR FORCE  
6TH AIR MOBILITY WING (AMC)  
MACDILL AIR FORCE BASE, FLORIDA**

**MAR 16 2012**

**MEMORANDUM FOR NOAA FISHERIES SERVICE**

**MR. MARK SRAMEK  
SOUTHEASTERN REGIONAL OFFICE  
263 13<sup>th</sup> AVENUE SOUTH  
ST PETERSBURG, FL 33701**

**FROM: 6 CES/DD**

**7621 Hillsborough Loop Drive  
MacDill AFB, FL 33621-5207**

**SUBJECT: Ecosystem Restoration Masterplan Implementation at MacDill AFB**

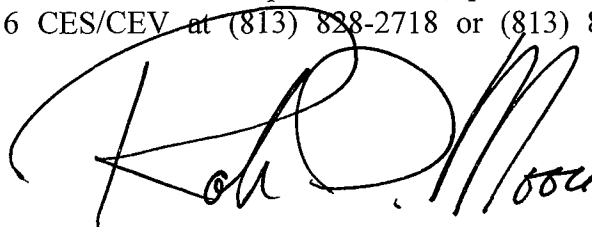
1. The US Air Force proposes to conduct mangrove wetland restoration activities as identified in the Ecosystem Restoration Masterplan for MacDill Air Force Base (AFB). The Proposed Action involves 25 individual multi-phase, multi-year projects that would restore the natural hydrology of the area and improve water quality, enhance and create wildlife habitat, control and remove exotic/nuisance species, and provide the opportunity to earn wetland mitigation credits for potential future use to offset mission impacts (Figure 1). Each project would be designed for independent implementation and would be intended to work synergistically with one another. Between 1957 and 1976 extensive expansion of drainage and mosquito ditching within MacDill AFB's mangrove estuaries occurred, which included dredging and deposition of spoil material from ditches on adjacent wetland areas; these spoil mounds subsequently created pockets of upland habitat where mangrove and saltern ecosystems previously had flourished. These spoil mounds were subsequently invaded by nuisance and exotic plant species. A variety of construction methods would be used to accomplish removal of exotic vegetation, excavation of spoil mounds, and fill of mosquito ditches (Figure 2). Environmental permitting through the Federal, state, and county regulatory agencies would be accomplished prior to restoration activities. Floating turbidity curtains and silt fencing would be utilized where feasible. In areas where trenching for silt fencing would be detrimental to tree roots, staked hay bales may be necessary. All measures would remain in place in good working order until soils stabilize sufficiently, after which all control measures would be removed.

2. An alternative being considered could consist of purchase of wetlands mitigation credits from a permitted mitigation bank within Tampa Bay/Anclote River Watershed. Mitigation banks simplify the wetlands mitigation process for potential clients by purchasing tracts of land and then 'banking' mitigation credit through the creation of new wetlands and restoration of degraded wetlands on the property. This mitigation credit can then be sold to customers who have projects that would result in wetlands impacts but who have no means to mitigate those impacts on their respective project sites.

**UNRIVALED GLOBAL REACH FOR AMERICA...ALWAYS!**

3. Recent surveys have been conducted at the proposed mangrove restoration project sites to determine if any threatened or endangered species inhabit these areas. No Federally protected threatened and endangered species have been observed within or adjacent to the proposed project areas. These areas have not been identified as critical habitat for any threatened or endangered species. Consequently, MacDill AFB believes that the proposed project would not adversely impact threatened or endangered species. We seek your input on the proposed project and our finding of no impact to NOAA National Marine Fisheries Service resources.

4. If you would like to inspect the proposed ecosystem restoration project areas, or if you have any questions or require additional information on the Proposed Action, please contact Mr. Andy Rider or Mr. Jason Kirkpatrick, 6 CES/CEV at (813) 828-2718 or (813) 828-0459, respectively.

A handwritten signature in black ink, appearing to read 'R. D. Moore', is written over the signature line.

ROBERT D. MOORE, GS-13  
Deputy Director, 6th Civil Engineer Squadron

Attachments:

Figure 1 – Ecosystem Restoration Masterplan Project Sites

Figure 2 – Example Spoil Mound and Ditch Plan View and Cross Section



**DEPARTMENT OF THE AIR FORCE  
6TH AIR MOBILITY WING (AMC)  
MACDILL AIR FORCE BASE, FLORIDA**

**MEMORANDUM FOR DIVISION OF HISTORIC RESOURCES**

**MR. SCOTT EDWARDS  
500 SOUTH BRONOUGH STREET  
TALLAHASSEE FL 32399**

**MAR 16 2012**

**FROM: 6 CES/DD**

**7621 Hillsborough Loop Drive  
MacDill AFB, FL 33621-5207**

**SUBJECT: Ecosystem Restoration Masterplan Implementation at MacDill AFB**

1. The US Air Force proposes to conduct mangrove wetland restoration activities as identified in the Ecosystem Restoration Masterplan for MacDill Air Force Base (AFB). The Proposed Action involves 25 individual multi-phase, multi-year projects that would restore the natural hydrology of the area and improve water quality, enhance and create wildlife habitat, control and remove exotic/nuisance species, and provide the opportunity to earn wetland mitigation credits for potential future use to offset mission impacts (Figure 1). Each project would be designed for independent implementation and would be intended to work synergistically with one another. Between 1957 and 1976 extensive expansion of drainage and mosquito ditching within MacDill AFB's mangrove estuaries occurred, which included dredging and deposition of spoil material from ditches on adjacent wetland areas; these spoil mounds subsequently created pockets of upland habitat where mangrove and saltern ecosystems previously had flourished. These spoil mounds were subsequently invaded by nuisance and exotic plant species. A variety of construction methods would be used to accomplish removal of exotic vegetation, excavation of spoil mounds, and fill of mosquito ditches (Figure 2). Environmental permitting through the Federal, state, and county regulatory agencies would be accomplished prior to restoration activities. Floating turbidity curtains and silt fencing would be utilized where feasible. In areas where trenching for silt fencing would be detrimental to tree roots, staked hay bales may be necessary. All measures would remain in place in good working order until soils stabilize sufficiently, after which all control measures would be removed.

2. An alternative being considered could consist of purchase of wetlands mitigation credits from a permitted mitigation bank within Tampa Bay/Anclote River Watershed. Mitigation banks simplify the wetlands mitigation process for potential clients by purchasing tracts of land and then 'banking' mitigation credit through the creation of new wetlands and restoration of degraded wetlands on the property. This mitigation credit can then be sold to customers who have projects that would result in wetlands impacts but who have no means to mitigate those impacts on their respective project sites.

**UNRIVALED GLOBAL REACH FOR AMERICA...ALWAYS!**

3. A representative from the MacDill AFB Cultural Resources staff surveyed the proposed ecosystem restoration project sites to determine if the proposed project has a potential to impact historic resources. There are no known archeological sites or historic structures in the vicinity of the proposed action site. We seek your input on the Proposed Action and our finding of no adverse effect to historic resources.

4. If you would like to inspect the proposed new spill gate project areas, or if you have any questions or require additional information on the Proposed Action, please contact Mr. Andy Rider or Mr. Jason Kirkpatrick, 6 CES/CEV at (813) 828-2718 or (813) 828-0459, respectively.

A handwritten signature in black ink, appearing to read 'R. D. Moore', with a stylized flourish at the end.

ROBERT D. MOORE, GS-13

Deputy Director, 6th Civil Engineer Squadron

Attachments:

Figure 1 – Ecosystem Restoration Masterplan Project Sites

Figure 2 – Example Spoil Mound and Ditch Plan View and Cross Section



**DEPARTMENT OF THE AIR FORCE  
6TH AIR MOBILITY WING (AMC)  
MACDILL AIR FORCE BASE, FLORIDA**

**MAR 16 2012**

MEMORANDUM FOR U.S. ARMY CORPS OF ENGINEERS  
JACKSONVILL REGULATORY DIVISION – TAMPA SECTION  
MR. CHARLES SCHNEPEL  
10117 PRINCESS PALM AVENUE, SUITE 120  
TAMPA, FLORIDA 33610-8300

FROM: 6 CES/DD  
7621 Hillsborough Loop Drive  
MacDill AFB 33621-5207

SUBJECT: Ecosystem Restoration Masterplan Implementation at MacDill AFB

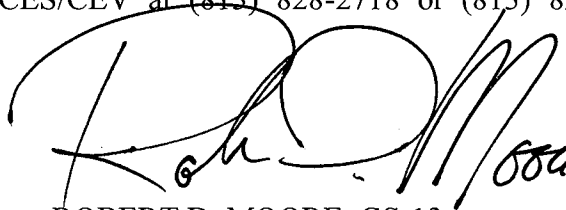
1. The US Air Force proposes to conduct mangrove wetland restoration activities as identified in the Ecosystem Restoration Masterplan for MacDill Air Force Base (AFB). The Proposed Action involves 25 individual multi-phase, multi-year projects that would restore the natural hydrology of the area and improve water quality, enhance and create wildlife habitat, control and remove exotic/nuisance species, and provide the opportunity to earn wetland mitigation credits for potential future use to offset mission impacts (Figure 1). Each project would be designed for independent implementation and would be intended to work synergistically with one another. Between 1957 and 1976 extensive expansion of drainage and mosquito ditching within MacDill AFB's mangrove estuaries occurred, which included dredging and deposition of spoil material from ditches on adjacent wetland areas; these spoil mounds subsequently created pockets of upland habitat where mangrove and saltern ecosystems previously had flourished. These spoil mounds were subsequently invaded by nuisance and exotic plant species. A variety of construction methods would be used to accomplish removal of exotic vegetation, excavation of spoil mounds, and fill of mosquito ditches (Figure 2). Environmental permitting through the Federal, state, and county regulatory agencies would be accomplished prior to restoration activities. Floating turbidity curtains and silt fencing would be utilized where feasible. In areas where trenching for silt fencing would be detrimental to tree roots, staked hay bales may be necessary. All measures would remain in place in good working order until soils stabilize sufficiently, after which all control measures would be removed.

2. An alternative being considered could consist of purchase of wetlands mitigation credits from a permitted mitigation bank within Tampa Bay/Anclote River Watershed. Mitigation banks simplify the wetlands mitigation process for potential clients by purchasing tracts of land and then 'banking' mitigation credit through the creation of new wetlands and restoration of degraded wetlands on the property. This mitigation credit can then be sold to customers who have projects that would result in wetlands impacts but who have no means to mitigate those impacts on their respective project sites.

**UNRIVALED GLOBAL REACH FOR AMERICA...ALWAYS!**

3. Recent surveys have been conducted at the proposed mangrove restoration project sites to determine if any threatened or endangered species inhabit these areas. No Federally protected threatened and endangered species have been observed within or adjacent to the proposed project areas. These areas have not been identified as critical habitat for any threatened or endangered species. Consequently, MacDill AFB believes that the proposed project would not adversely impact threatened or endangered species. We seek your input on the proposed project and our finding of no impact to USACE resources.

4. If you would like to inspect the proposed ecosystem restoration project areas, or if you have any questions or require additional information on the Proposed Action, please contact Mr. Andy Rider or Mr. Jason Kirkpatrick, 6 CES/CEV at (813) 828-2718 or (813) 828-0459, respectively.

A handwritten signature in black ink, appearing to read 'R. D. Moore', with a stylized flourish at the end.

ROBERT D. MOORE, GS-13  
Deputy Director, 6th Civil Engineer Squadron

Attachments:

Figure 1 – Ecosystem Restoration Masterplan Project Sites

Figure 2 – Example Spoil Mound and Ditch Plan View and Cross Section



**DEPARTMENT OF THE AIR FORCE  
6TH AIR MOBILITY WING (AMC)  
MACDILL AIR FORCE BASE, FLORIDA**

**MAR 16 2012**

MEMORANDUM FOR U.S. FISH AND WILDLIFE SERVICE  
MR. DAVE HANKLA  
7915 BAYMEADOWS WAY, SUITE 200  
JACKSONVILLE, FL 32256-7517

FROM: 6 CES/DD  
7621 Hillsborough Loop Drive  
MacDill AFB, FL 33621-5207

SUBJECT: Ecosystem Restoration Masterplan Implementation at MacDill AFB

1. The US Air Force proposes to conduct mangrove wetland restoration activities as identified in the Ecosystem Restoration Masterplan for MacDill Air Force Base (AFB). The Proposed Action involves 25 individual multi-phase, multi-year projects that would restore the natural hydrology of the area and improve water quality, enhance and create wildlife habitat, control and remove exotic/nuisance species, and provide the opportunity to earn wetland mitigation credits for potential future use to offset mission impacts (Figure 1). Each project would be designed for independent implementation and would be intended to work synergistically with one another. Between 1957 and 1976 extensive expansion of drainage and mosquito ditching within MacDill AFB's mangrove estuaries occurred, which included dredging and deposition of spoil material from ditches on adjacent wetland areas; these spoil mounds subsequently created pockets of upland habitat where mangrove and saltern ecosystems previously had flourished. These spoil mounds were subsequently invaded by nuisance and exotic plant species. A variety of construction methods would be used to accomplish removal of exotic vegetation, excavation of spoil mounds, and fill of mosquito ditches (Figure 2). Environmental permitting through the Federal, state, and county regulatory agencies would be accomplished prior to restoration activities. Floating turbidity curtains and silt fencing would be utilized where feasible. In areas where trenching for silt fencing would be detrimental to tree roots, staked hay bales may be necessary. All measures would remain in place in good working order until soils stabilize sufficiently, after which all control measures would be removed.

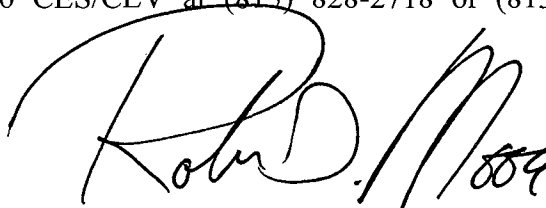
2. An alternative being considered could consist of purchase of wetlands mitigation credits from a permitted mitigation bank within Tampa Bay/Anclote River Watershed. Mitigation banks simplify the wetlands mitigation process for potential clients by purchasing tracts of land and then 'banking' mitigation credit through the creation of new wetlands and restoration of degraded wetlands on the property. This mitigation credit can then be sold to customers who have projects that would result in wetlands impacts but who have no means to mitigate those impacts on their respective project sites.

**UNRIVALED GLOBAL REACH FOR AMERICA...ALWAYS!**



3. Recent surveys have been conducted at the proposed mangrove restoration project sites to determine if any threatened or endangered species inhabit these areas. No Federally protected threatened and endangered species have been observed within or adjacent to the proposed project areas. These areas have not been identified as critical habitat for any threatened or endangered species. Consequently, MacDill AFB believes that the proposed project would not adversely impact threatened or endangered species. We seek your input on the proposed project and our finding of no impact to USFWS resources.

4. If you would like to inspect the proposed ecosystem restoration project areas, or if you have any questions or require additional information on the Proposed Action, please contact Mr. Andy Rider or Mr. Jason Kirkpatrick, 6 CES/CEV at (813) 828-2718 or (813) 828-0459, respectively.

A handwritten signature in black ink, appearing to read "Robert D. Moore" with a stylized flourish at the end.

ROBERT D. MOORE, GS-13

Deputy Director, 6th Civil Engineer Squadron

Attachments:

Figure 1 – Ecosystem Restoration Masterplan Project Sites

Figure 2 – Example Spoil Mound and Ditch Plan View and Cross Section



## FLORIDA DEPARTMENT of STATE

**RICK SCOTT**  
Governor

**KEN DETZNER**  
Secretary of State

Mr. Robert D. Moore  
Department of the Air Force  
6 CES/DD  
7621 Hillsborough Loop Drive  
MacDill Air Force Base, Florida 33621-5207

April 13, 2012

RE: DHR Project File Number: 2012-1497  
*Proposed Ecosystem Restoration Masterplan Implementation*  
MacDill Air Force Base, Hillsborough County

Dear Mr. Moore:

This office reviewed the referenced project for possible impact to historic properties listed, or eligible for listing, on the *National Register of Historic Places*. The review was conducted in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended and *36 CFR Part 800: Protection of Historic Properties*.

A review of the Florida Master Site File and our records indicates that there are two recorded archaeological sites recorded in close proximity to the proposed undertaking (see enclosure). However, it is the opinion of this office that the proposed undertaking is not likely to have an effect on historic properties, provided that the Department of the Air Force makes contingency plans in the case of fortuitous finds or unexpected discoveries during ground disturbing activities within the project area:

- If prehistoric or historic artifacts, such as pottery or ceramics, projectile points, dugout canoes, metal implements, historic building materials, or any other physical remains that could be associated with early Native American, early European, or American settlement are encountered at any time within the project site area, the permitted project shall cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. The applicant shall contact the Florida Department of State, Division of Historical Resources, Review and Compliance Section at (850) 245-6333. Project activities shall not resume without verbal and/or written authorization.
- In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, *Florida Statutes*.

### DIVISION OF HISTORICAL RESOURCES

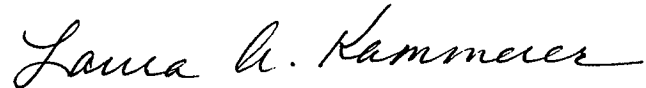
R. A. Gray Building • 500 South Bronough Street • Tallahassee, Florida 32399-0250  
Telephone: 850.245.6300 • Facsimile: 850.245.6436 • [www.flheritage.com](http://www.flheritage.com)  
*Commemorating 500 years of Florida history* [www.fl500.com](http://www.fl500.com)



Mr. Moore  
DHR No. 2012-1497  
April 13, 2012  
Page 2 of 2

If you have any questions concerning our comments, please contact Scott Edwards, Historic Preservationist, by electronic mail [scott.edwards@dos.myflorida.com](mailto:scott.edwards@dos.myflorida.com), or at 850.245.6333 or 800.847.7278.

Sincerely,

A handwritten signature in cursive script that reads "Laura A. Kammerer".

Laura A. Kammerer  
Deputy State Historic Preservation Officer  
For Review and Compliance

Enclosure

PC: Jason Kirkpatrick, MacDill AFB

Tampa, Hillsborough County, Florida

## **PUBLIC NOTICE - UNITED STATES AIR FORCE**

The Air Force (AF) seeks public comment on AF Environmental Impact Analysis Process (EIAP) documents for the Proposed Implementation of the Ecosystem Restoration Masterplan Projects at MacDill Air Force Base (AFB). The Proposed Action is intended to restore and enhance the remaining natural estuarine ecosystem present throughout a significant portion of the southern Interbay Peninsula within MacDill AFB. The Proposed Action would include 25 multi-phase, multi-year mangrove wetland restoration projects that would restore the natural hydrology and enhance and create wildlife habitat while improving the overall function of the ecosystem. Impacts to wetland systems have been coordinated with Federal, state and county regulatory agencies. MacDill AFB has evaluated this action in accordance with Executive Order 11988 - Floodplain Management, and with Executive Order 11990 - Protection of Wetlands and believes there is no practical alternative to construction within the floodplain or jurisdictional wetlands.

### **NOTICE OF AVAILABILITY**

The EIAP documents satisfy the requirements of the National Environmental Policy Act (NEPA). The documents are available for public review and comment from June 18, 2012 through July 18, 2012 at the Tampa/Hillsborough County Public Library, located at 900 N. Ashley Drive, Tampa, FL 33606. The documents may be found in the Humanities Section of the Main Library. Address written comments to the 6 AMW Public Affairs, 8209 Hangar Loop Drive, Suite 14, MacDill AFB, FL 33621-5502. The telephone number is (813) 628-2215.

#7926

June 18, 2012



# Florida Department of Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

Rick Scott  
Governor

Jennifer Carroll  
Lt. Governor

Herschel T. Vinyard Jr.  
Secretary

August 9, 2012

Mr. Jason W. Kirkpatrick  
Department of the Air Force  
6 CES/CEVN  
7621 Hillsborough Loop Drive  
MacDill AFB, FL 33621-5207

RE: Department of the Air Force – Draft Environmental Assessment for  
Ecosystem Restoration Masterplan Implementation at MacDill Air Force  
Base – Hillsborough County, Florida.  
SAI # FL201206146267C

Dear Mr. Kirkpatrick:

The Florida State Clearinghouse has coordinated a review of the Draft Environmental Assessment (EA) under the following authorities: Presidential Executive Order 12372; § 403.061(42), *Florida Statutes*; the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended; and the National Environmental Policy Act, 42 U.S.C. §§ 4321-4347, as amended.

The Florida Department of State (DOS) indicates that, although there are two recorded archaeological sites within close proximity to the project area, the proposed undertaking is not likely to have an effect on historic properties. The U.S. Air Force should, however, make contingency plans in the case of fortuitous finds or unexpected discoveries during ground disturbing activities. If any prehistoric or historic artifacts are encountered during construction, all ground disturbing activities should cease and the applicant should contact the DOS Division of Historical Resources, Review and Compliance Section at (850) 245-6333 for further instructions. Project activities should not resume without verbal and/or written authorization from the DOS. In addition, in the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, *Florida Statutes*. Please refer to the enclosed DOS letter for further information.

Based on the information contained in the draft EA and enclosed agency comments, the state has determined that, at this stage, the proposed federal action is consistent with the Florida Coastal Management Program (FCMP). To ensure the project's continued consistency with the FCMP, the concerns identified by the DOS must be addressed prior

Mr. Jason W. Kirkpatrick  
August 9, 2012  
Page 2 of 2

to project implementation. The state's continued concurrence will be based on the activity's compliance with FCMP authorities, including federal and state monitoring of the activity to ensure its continued conformance, and the adequate resolution of issues identified during this and subsequent regulatory reviews. The state's final concurrence of the project's consistency with the FCMP will be determined during the environmental permitting process in accordance with Section 373.428, *Florida Statutes*.

Thank you for the opportunity to review the proposed project. Should you have any questions regarding this letter, please contact Ms. Lauren P. Milligan at (850) 245-2170.

Yours sincerely,



Sally B. Mann, Director  
Office of Intergovernmental Programs

SBM/rb  
Enclosures

cc: Laura Kammerer, DOS  
Andrew Chen, AMEC Environment & Infrastructure, Inc.



# Florida

Department of Environmental Protection

"More Protection, Less Process"



Categories

[DEP Home](#) | [OIP Home](#) | [Contact DEP](#) | [Search](#) | [DEP Site Map](#)

Project Information	
Project:	FL201206146267C
Comments Due:	07/26/2012
Letter Due:	08/13/2012
Description:	DEPARTMENT OF THE AIR FORCE - DRAFT ENVIRONMENTAL ASSESSMENT FOR ECOSYSTEM RESTORATION MASTERPLAN IMPLEMENTATION AT MACDILL AIR FORCE BASE - HILLSBOROUGH COUNTY, FLORIDA.
Keywords:	USAF - DEA, ECOSYSTEM RESTORATION MASTERPLAN, MACDILL AFB - HILLSBOROUGH CO.
CFDA #:	12.200
Agency Comments:	
<b>ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION</b>	
The DEP has no comments on the restoration masterplan.	
<b>STATE - FLORIDA DEPARTMENT OF STATE</b>	
The DOS indicates that, although there are two recorded archaeological sites within close proximity to the project area, the proposed undertaking is not likely to have an effect on historic properties. The Department of the Air Force should, however, make contingency plans in the case of fortuitous finds or unexpected discoveries during ground disturbing activities. If any prehistoric or historic artifacts are encountered during construction, all ground disturbing activities should cease and the applicant should contact the DOS Division of Historical Resources, Review and Compliance Section at (850) 245-6333 for further instructions. Project activities should not resume without verbal and/or written authorization from the DOS. In addition, in the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, Florida Statutes.	
<b>TAMPA BAY RPC - TAMPA BAY REGIONAL PLANNING COUNCIL</b>	
The TBRPC notes that the proposal is not in conflict with the provisions of its governing document, "Future of the Region: A Strategic Regional Policy Plan for the Tampa Bay Region." Staff considers the project to have met the local requirements of the intergovernmental coordination and review process and no further review will be necessary.	
<b>FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION</b>	
NO COMMENT BY TIM KING ON 7/18/12.	
<b>SOUTHWEST FLORIDA WMD - SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT</b>	
No Comments Received	
<b>HILLSBOROUGH - HILLSBOROUGH COUNTY</b>	
No Comments	

For more information or to submit comments, please contact the Clearinghouse Office at:

3900 COMMONWEALTH BOULEVARD, M.S. 47  
TALLAHASSEE, FLORIDA 32399-3000  
TELEPHONE: (850) 245-2161  
FAX: (850) 245-2190

Visit the [Clearinghouse Home Page](#) to query other projects.

[Copyright](#)  
[Disclaimer](#)  
[Privacy Statement](#)





## FLORIDA DEPARTMENT of STATE

**RICK SCOTT**  
Governor

**KEN DETZNER**  
Secretary of State

Ms. Lauren P. Milligan  
Environmental Manager  
Florida State Clearinghouse  
Florida Department of Environmental Protection  
3900 Commonwealth Boulevard, Mail Station 47  
Tallahassee, Florida 32399-3000

July 23, 2012

**RECEIVED**

JUL 25 2012

DEP Office of  
Intergov't Programs

RE: DHR Project File Number: 2012-3210  
SAI #: 201206146267C  
U.S. Department of the Air Force  
*Draft Environmental Assessment for the Ecosystem Restoration Masterplan Implementation*  
MacDill Air Force Base, Hillsborough County

Dear Ms. Milligan:

Our office reviewed the referenced project for possible impact to historic properties listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical, architectural or archaeological value. The review was conducted in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended and 36 *CFR Part 800: Protection of Historic Properties* and the implementing state regulations.

A review of the Florida Master Site File and our records indicates that there are two recorded archaeological sites recorded in close proximity to the proposed undertaking (see enclosure). However, it is the opinion of this office that the proposed undertaking is not likely to have an effect on historic properties, provided that the Department of the Air Force makes contingency plans in the case of fortuitous finds or unexpected discoveries during ground disturbing activities within the project area:

- If prehistoric or historic artifacts, such as pottery or ceramics, projectile points, dugout canoes, metal implements, historic building materials, or any other physical remains that could be associated with early Native American, early European, or American settlement are encountered at any time within the project site area, the permitted project shall cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. The applicant shall contact the Florida Department of State, Division of Historical Resources, Review and Compliance Section at (850) 245-6333. Project activities shall not resume without verbal and/or written authorization.
- In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, *Florida Statutes*.

### DIVISION OF HISTORICAL RESOURCES

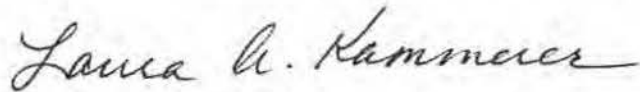
R. A. Gray Building • 500 South Bronough Street • Tallahassee, Florida 32399-0250  
Telephone: 850.245.6300 • Facsimile: 850.245.6436 • [www.flheritage.com](http://www.flheritage.com)  
*Commemorating 500 years of Florida history* [www.fla500.com](http://www.fla500.com)



Ms. Milligan  
DHR No.:2012-3210  
July 23, 2012  
Page 2 of 2

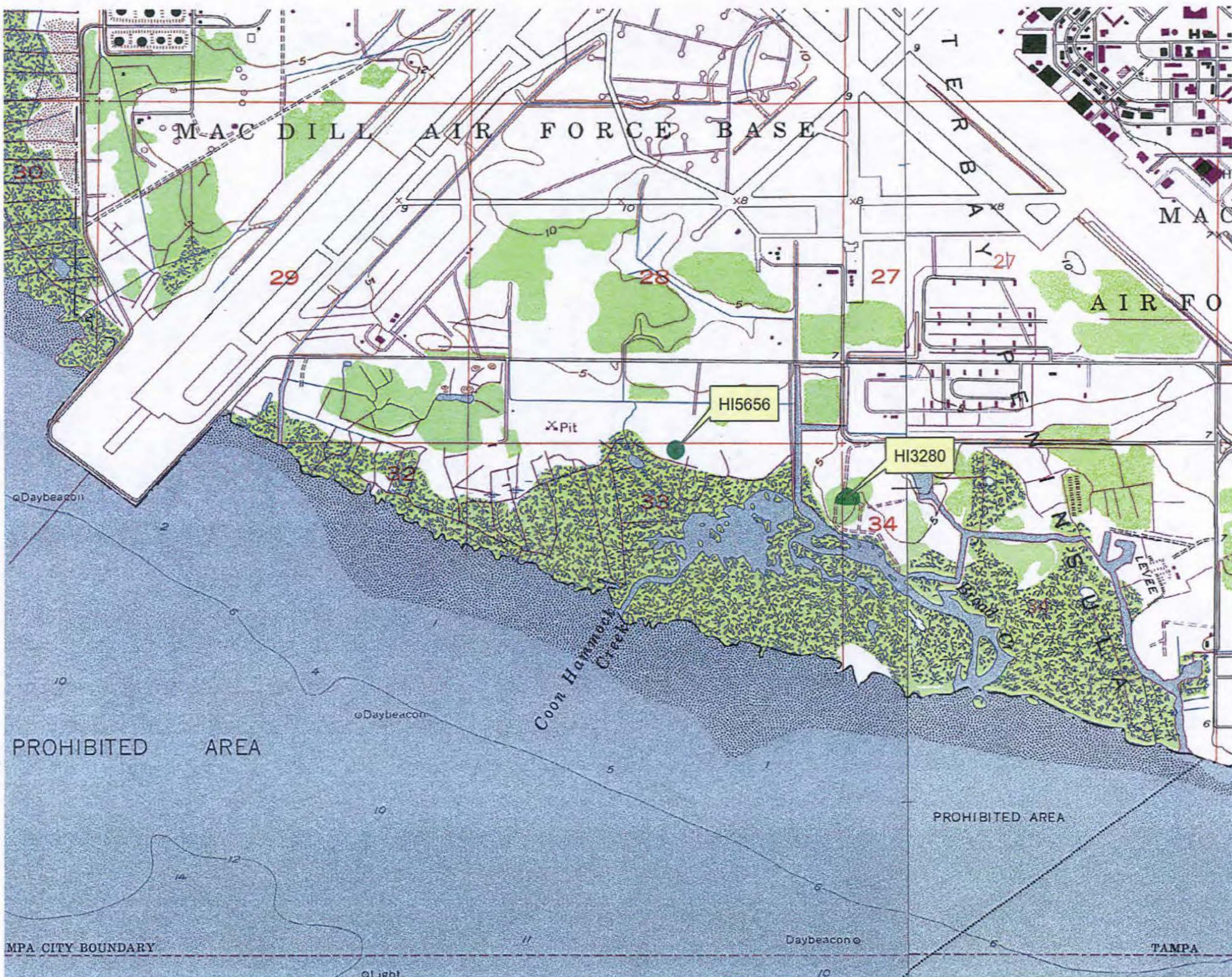
If you have any questions concerning our comments, please contact Scott Edwards, Historic Preservationist, by electronic mail [scott.edwards@dos.myflorida.com](mailto:scott.edwards@dos.myflorida.com), or at 850.245.6333 or 800.847.7278.

Sincerely,

A handwritten signature in cursive script that reads "Laura A. Kammerer". The signature is written in dark ink and is positioned above the printed name and title.

Laura A. Kammerer  
Deputy State Historic Preservation Officer  
For Review and Compliance









Commissioner Larry Bustle  
Chair

Mayor Robert Minning  
Vice-Chair

Mr. Andy Núñez  
Secretary/Treasurer

Vice-Mayor William Dodson  
Immediate Past Chair

Manny L. Pumariega  
Executive Director

August 8, 2012

Mr. Lauren Milligan, Environmental Manager  
Florida State Clearinghouse  
Florida Department of Environmental Protection  
3900 Commonwealth Blvd, M.S. 47  
Tallahassee, FL 32399-3000

**Subject: IC&R #064-12 - Draft Environmental Assessment for Ecosystem Restoration Masterplan Implementation at MacDill A.F.B., FSC SAI #FL201206146267C & SWFWMD ERP #667383, Hillsborough County**

Dear Ms. Milligan:

The Tampa Bay Regional Planning Council has received correspondence from your agency regarding the above-mentioned project submitted for processing under the Intergovernmental Coordination and Review program.

While our agency **does** find the proposal to be regionally significant, initial in-house review does not indicate the necessity for specific action by our Council. All member local governments of the Tampa Bay Regional Planning Council's (TBRPC) Clearinghouse Review Committee and/or TBRPC's full policy board will be notified of your application. You will be contacted if any local concerns are identified.

In accordance with the State's delegated IC&R review requirements, this project is considered to have met the local requirements of the IC&R process and no further review will be required by our Agency. This letter constitutes compliance with IC&R only and does not preclude the applicant from complying with **other** applicable requirements or regulations.

If you have any questions, please do not hesitate to contact me (ext. 29).

Sincerely,

John M. Meyer  
IC&R Coordinator



**FWS Log Nos. 41910-2012-I-0116**

November 26, 2012

Mr. Robert Moore, Deputy Director  
6 CES/DD  
Department of the Air Force  
7621 Hillsborough Loop Drive  
MacDill Air Force Base, Florida 33621-5207  
(Attn: Jason Kirkpatrick)

Re: Review of Draft Environmental Assessment (DEA): Ecosystem Restoration  
Master Plan Implementation at MacDill Air Force Base, Hillsborough County,  
Florida

Dear Mr. Moore:

Our office has reviewed subject DEA, dated June 2012, and your letter of March 16, 2012 requesting input on the document. MacDill AFB proposes to conduct mangrove and salt marsh restoration activities within its installation boundaries. The activities consist of 25 individual, multi-phase, multi-year projects intended to restore natural hydrology and water quality, enhance and create wildlife habitat, and control and remove exotic/nuisance plants. Their intent is to offset potential wetland impacts from future, mission-related actions on base. MacDill AFB is also considering as an alternative the purchase of wetland mitigation credits from the state and Federally-approved Tampa Bay Mitigation Bank. The bank is located due south of the installation across Tampa Bay, and is part of the Tampa Bay/Anclote River watershed. We provide the following comments in accordance with section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*), and National Environmental Policy Act of 1969 as amended (83 Stat. 852; 42 U.S.C 4321 *et seq.*).

### **Endangered Species Act**

MacDill AFB completed an updated endangered species population survey in 2005. Species identified within the terrestrial and aquatic boundaries of the facility include the threatened loggerhead (*Caretta caretta*) and endangered green (*Chelonia mydas*) sea turtles, endangered wood stork (*Mycteria americana*) and threatened piping plover

(*Charadrius melodus*), and endangered West Indian (Florida) manatee (*Trichechus manatus latirostris*). The threatened roseate tern (*Sterna dougallii*) was also listed, but a review of historic and current literature does not include any credible sighting records of migrating individuals within Hillsborough County. The endangered Bachman's warbler (*Vermivora bachmanii*) was last observed in the United States in 1962, with no credible sightings since that time. These two species, as well as the federally delisted bald eagle (*Haliaeetus leucocephalus*) and Arctic peregrine falcon (*Falco peregrinus tundrius*), should be removed from Table 3-1 of the DEA. In addition, the U.S. Fish and Wildlife Service no longer recognizes the C2 classification of candidates for listing; therefore, this designation can be removed for species so classified in the same table. The gopher tortoise has recently been added to the current list of Federal candidate species for listing, so the designation "C" can be added to this species' Federal status.

As a result of a 2005 endangered species survey, MacDill AFB indicated that none of the listed species occurred within the proposed restoration project sites. However, due to the extensive number of drainage ditches on the base, and natural and artificial waterways within the mangrove swamp and salt marsh, it is our view that wood storks could opportunistically forage within some of the mosquito and drainage ditches and open-water impoundments that have suitable foraging conditions (shallow, [ $<15$  inches], fluctuating water levels with or without emergent vegetation). A review of recent aerial photographs indicates that manatees do not appear to have access to the majority of the proposed restoration sites. However, manatees do occur in Tampa Bay and near shore waters within installation boundaries. Raccoon Hammock and Broad Creek, the two natural tidal creeks present within the installation boundaries, drain into Tampa Bay and appear accessible to manatees. A large, artificial drainage canal at the eastern end of the project area also appears capable to supporting manatee use. A number of the proposed projects are located in areas that will require in-water transportation and staging of equipment and supplies. Such activities therefore have the potential to impact manatees.

MacDill AFB has acknowledged these potential impacts and determined with respect to the wood stork that such impacts are likely to be minor and short term, resulting primarily from temporary displacement. The installation has not identified breeding or roosting sites within the project area. As a result, MacDill AFB has determined that the proposed Ecosystem Restoration Master Plan may affect, but is not likely to adversely affect, wood storks.

We concur with this determination for those project sites that do not overlap with the base's Solid Waste Management Units (SWMUs) identified as part of the installation's Ecological Restoration Program. Sites 6, 7, 18 – 22, 24 and 25 overlap with one or more SWMUs in whole or in part. Due to concerns over the possible presence of chemical and other environmental contaminants at these sites, we are unable at this time to concur with your determination of effects for these sites. We recommend that MacDill AFB remove these sites from current habitat restoration/creation consideration, and instead undertake an environmental analysis and natural resource risk assessment of the potential contaminants on those sites. Such information is vital in our view to assessing how the proposed habitat restoration and/or creation at those sites may directly, indirectly, and

cumulatively affect the wood stork. Once such information is available, the installation if warranted can amend the Master Plan and submit the new information, along with any previous and/or revised ecosystem restoration plans, to our office for further review and section 7 consultation.

With respect to the manatee, MacDill AFB has proposed incorporating the most recent Standard Manatee Conditions for In-Water Work into all restoration actions that involve in-water work. We concur with this proposal, but are of the opinion that other special conditions are needed to reduce the likelihood of take of a manatee to insignificant or discountable levels. MacDill AFB has agreed to incorporate the following additional recommendations into its DEA and project plans and specifications.

- restrict in-water work to the period from one half-hour after sunrise to one half-hour before sunset
- moor equipment and supply barges such that they do not represent a crushing hazard between barges or between a barge and the bottom of the waterway. Crushing hazards may be present when there is less than a four-foot clearance between barges, or between the bottom of the barge hull and the bottom of the waterway. Fenders providing a four-foot standoff at maximum compression may be used to address the crushing hazard between two barges. Barge load should be adjusted to water depth to provide the required amount of clearance

Although this does not represent a biological opinion as described in section 7 of the Act, it does fulfill the requirements of the Act, and no further action is required. Changes to the Master Plan, however, may increase the risk of adverse effects to a level at which take is reasonably certain to occur. MacDill AFB under such circumstances should consider seeking the assistance of this office to ascertain if additional section 7 consultation is needed.

### **National Environmental Policy Act**

MacDill AFB has proposed a phased, ecological restoration of 25 sites within its installation boundaries over a 10-year period. The Selection Standards for the Proposed Action as described in the DEA are as follows.

- improve water quality within the installation and Tampa Bay
- enhance and create wildlife habitat
- control and remove exotic/nuisance plant species
- earn wetland mitigation credits to offset wetland impacts from future installation projects.

The DEA found that the proposed on-site restoration would not have any significant environmental impact, nor was there any practicable alternative to the Proposed Action occurring in floodplain and wetland areas.

It is our view that the DEA does not provide sufficient information or analysis to support



its findings relative to significant impacts or practicable alternatives. With regard to the proposed action, the DEA did not describe any objective functional assessment(s) carried out in support of this action's addressing its selection standards. Conversely, the Tampa Bay Mitigation Bank's accrediting of wetland mitigation was based on the Estuarine Wetland Rapid Assessment Procedure (E-WRAP), one of the acceptable functional wetland assessment methodologies in use at the time the bank was accepted by Federal and state regulatory authorities. Without such a comparable, acceptable functional assessment for the Proposed Action, it is our position that any finding on the Proposed Action alone or relative to the Mitigation Bank Alternative, does not adequately address the selection standards described in the DEA, nor meet the standards under NEPA or Executive Order 11988. We recommend that MacDill AFB undertake such a functional assessment of the Proposed Action comparable to that used for the Tampa Bay Mitigation Bank, and use those results in its final NEPA assessment.

We further note that the DEA did not include any specific description and analysis of the mitigation bank alternative in the DEA's Description of the Proposed Action and Alternatives, Description of the Affected Environment, and Environmental Consequences of the Proposed Action and Alternatives. The FONSI did not include the Mitigation Bank Alternative. It is our view that if MacDill AFB intends to retain the option of using the mitigation bank to address its selection standards under the DEA, the DEA needs to include more specific description and analysis of the mitigation bank alternative.

We appreciate the opportunity to review and comment on the DEA. If you have any questions regarding this response, please contact Mr. John Milio of my staff at the address on the letterhead, by e-mail at [john\\_milio@fws.gov](mailto:john_milio@fws.gov), or by calling 904-731-3098.

Sincerely,

David L. Hankla  
Field Supervisor



**DEPARTMENT OF THE AIR FORCE  
6TH AIR MOBILITY WING (AMC)  
MACDILL AIR FORCE BASE, FLORIDA**

**MEMORANDUM FOR UNITED STATES FISH AND WILDLIFE SERVICE**

Attn: David Hankla  
7915 Baymeadow Way, Suite 200  
Jacksonville, Florida 32256-7517

**FROM:** 6 CES/CD  
7621 Hillsborough Loop Drive  
MacDill AFB, Florida 33621

**SUBJECT:** Response to Comments from USFWS on Environmental Assessment for Ecosystem Restoration Master Plan Implementation at MacDill Air Force Base

1. Thank you for your review of our Draft Environmental Assessment (DEA) for Ecosystem Restoration Master Plan implementation at MacDill Air Force Base (AFB). We note that the USFWS has some concerns about the Ecosystem Restoration Master Plan and the associated DEA. We feel that the proposed ecosystem restoration projects, although challenging, are worth pursuing; that they will have a net ecologic benefit to the mangrove estuary system and surrounding natural areas. We hope that the additional information provided below fully addresses the concerns raised in your letter dated 26 November 2012.

**Mitigation Banking Alternative will be Eliminated:**

2. After considering your agencies comments, as well as those from our internal Air Force review, we have determined that the purchase of wetland mitigation credits from the Tampa Bay Mitigation Bank is not a reasonable alternative to the Proposed Action. We have modified the DEA and eliminated the purchase of wetland mitigation credit as an alternative. The DEA now only evaluates the Proposed Action and the No Action Alternative.

**Conflicts with Environmental Restoration Program Sites will be Eliminated:**

3. A substantial concern raised in your comments was the overlap between ecosystem restoration sites and Environmental Restoration Program (ERP) sites. It was recommended that any of the ecosystem restoration sites, specifically Sites 6, 7, 18 through 20, and 22 through 25, which fully or partially overlap with ERP sites be removed from the ecosystem restoration master plan. The USFWS notes that potential disturbance and exposure of chemical and other environmental contaminants during construction activities could result in unintended adverse environmental effects. We have examined the ERP sites which overlap with ecosystem restoration sites. We agree that for ERP sites which have not been fully assessed or for sites which are currently in the remedial action stage, the environmental effects resulting from disturbance of ERP sites cannot be determined at this time.

4. For ERP sites that have been closed and require no further action; however, we feel that construction activities can be accomplished safely, without any adverse environmental effects,

**UNRIVALED GLOBAL REACH FOR AMERICA...ALWAYS!**

since contaminant levels are below risk screening levels. As indicated in the DEA, one ERP Site (SWMU-04) has been closed and requires No Further Action. Consequently, we feel completion of the ecosystem restoration work proposed for Ecosystem Restoration Master Plan Site 21 and the portion overlapping Site 22 can be completed safely since SWMU 04 has been closed.

5. There are also several ecosystem restoration sites which only partially overlap with ERP sites. To eliminate any uncertainty with regard to environmental consequences, we propose to eliminate the completion of any construction activities within open or active ERP sites. Only two of the ecosystem restoration sites have been designed at this time, and neither site is located within an active ERP site, so most of the site boundaries have not been truly defined yet. Furthermore, much of the proposed work involves restoration of linear mosquito ditches which will be accomplished on a 'per foot' basis. Consequently, we feel it will be easy to shift project boundaries to avoid work within ERP sites. This will allow us to accomplish the maximum amount of ecosystem restoration without the risk of disturbing potentially contaminated media. By limiting restoration work to areas that have not been affected by MacDill's historic disposal activities, we anticipate that the USFWS will be able to assess the direct, indirect and cumulative effects that proposed ecosystem restoration work would have on Federally protected species, most notably the Wood Stork (*Mycteria americana*). We have modified the DEA to clearly state that no work will be accomplished within the boundaries of active ERP sites.

6. Unfortunately, three ecosystem restoration sites fall completely within the boundaries of active ERP sites. Restoration work at Ecosystem Restoration Master Plan Site 7, Site 24, and Site 25 will be eliminated entirely.

7. Also, please note that MacDill AFB has an established contingency plan which takes effect for any inadvertent discovery, be it contaminated media, archaeological resources, or unmarked utilities. For any inadvertent discovery, all work at the site must cease until the appropriate MacDill office can evaluate the situation and develop a response plan.

#### **Ecologic Functional Assessment will be Accomplished:**

8. A second major concern your agency posed on the DEA was the lack of an objective functional assessment of the ecologic change expected from proposed ecosystem restoration projects. Without functional assessment, it cannot be clearly demonstrated that the proposed ecosystem restoration work would achieve the selection standards described in the DEA. Unfortunately, completion of a functional assessment to demonstrate the ecologic lift anticipated for each of the 25 ecosystem restoration projects is not feasible as part of this environmental planning document. This level of assessment is accomplished during project permitting. However, we agree that completion of a functional assessment for these restoration projects, using an approved assessment method, is necessary to demonstrate that proposed habitat restoration work would result in net ecologic gain.

9. Luckily, two of the proposed ecosystem restoration master plan sites, Sites 8 & 15, are planned for implementation in FY13 and have been fully designed. MacDill is currently seeking permits for the restoration of these two sites, and has completed a functional assessment of the ecologic lift that would result from their restoration using the Unified Mitigation Assessment Method (UMAM). The DEA has been modified to provide the results of the functional assessment completed for Sites 8 & 15. We feel that the net ecologic change calculated for Sites 8 & 15 can be considered reasonably representative to the ecologic improvement that would be expected for any of the projects described in Ecosystem Restoration Master Plan. The functional

assessment completed for Sites 8 & 15 clearly demonstrates that a net ecologic lift is predicted for the sites following restoration.

**Threatened and Endangered Species Comments:**

10. Table 3-1 has been updated as recommended in your letter. The roseate tern (*Sterna dougallii*), Bachman's warbler (*Vermivora bachmanii*), bald eagle (*Haliaeetus leucocephalus*), and arctic peregrine falcon (*Falco peregrinus tundrius*) have been removed from Table 3-1 of the DEA. Furthermore, reference to the C2 classification of candidates for listing has been eliminated. The gopher tortoise (*Gopherus polyphemus*), which has been recently added as a Federal candidate species, has been designated as such in Table 3-1.

11. Your letter also states concern about potential for impact to the West Indian (Florida) manatee (*Trichechus manatus latirostris*) associated with in-water staging and transportation of equipment. We believe that by complying with the Standard Manatee Construction Conditions, typically stipulated in all permits involving in-water work, will substantially reduce any potential to impact manatees.

12. The edits described above have been incorporated into this Draft Final version of the document. We look forward to working with you toward successful completion of consultation in accordance with section 7 of the Endangered Species Act and the National Environmental Policy Act of 1969.

13. If you have any questions about our responses or the Draft Final EA, please contact Mr. Jason Kirkpatrick at (813) 828-0459.

ROBERT D. MOORE, GS-13  
Deputy Director, 6 Civil Engineering Squadron

**Attachment:**

1. Draft Final Environmental Assessment for Ecosystem Restoration Master Plan





# United States Department of the Interior

## U. S. FISH AND WILDLIFE SERVICE

7915 BAYMEADOWS WAY, SUITE 200  
JACKSONVILLE, FLORIDA 32256-7517

IN REPLY REFER TO:

**FWS Log Nos. 41910-2012-I-0116**

February 06, 2013

Mr. Robert Moore, Deputy Director  
6 CES/DD  
Department of the Air Force  
7621 Hillsborough Loop Drive  
MacDill Air Force Base, Florida 33621-5207  
(Attn: Jason Kirkpatrick)

Re: Review of Draft Environmental Assessment (DEA): Ecosystem Restoration Master Plan Implementation at MacDill Air Force Base, Hillsborough County, Florida

Dear Mr. Moore:

Our office has reviewed subject DEA, dated June 2012, your letter of March 16, 2012 requesting input on the document, and most recently, your email correspondence dated February 6, 2012. MacDill AFB proposes to conduct mangrove and salt marsh restoration activities within its installation boundaries. The activities consist of 25 individual, multi-phase, multi-year projects intended to restore natural hydrology and water quality, enhance and create wildlife habitat, and control and remove exotic/nuisance plants. Their intent is to offset potential wetland impacts from future, mission-related actions on base. MacDill AFB has determined that the purchase of wetland mitigation credits from the state and Federally-approved Tampa Bay Mitigation Bank is not a viable alternative. The bank is located due south of the installation across Tampa Bay, and is part of the Tampa Bay/Anclote River watershed. We provide the following comments in accordance with section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*), and National Environmental Policy Act of 1969 as amended (83 Stat. 852; 42 U.S.C. 4321 *et seq.*).

### Endangered Species Act

MacDill AFB completed an updated endangered species population survey in 2005. Species identified within the terrestrial and aquatic boundaries of the facility include the threatened loggerhead (*Caretta caretta*) and endangered green (*Chelonia mydas*) sea turtles, endangered wood stork (*Mycteria americana*) and threatened piping plover (*Charadrius melodus*), and endangered West Indian (Florida) manatee (*Trichechus manatus latirostris*). MacDill AFB also included the gopher tortoise which has recently been added to the current list of Federal candidate species. Federal candidate species do not receive protection under the ESA.

As a result of a 2005 endangered species survey, MacDill AFB indicated that none of the listed species occurred within the proposed restoration project sites. However, due to the extensive number of drainage ditches on the base, and natural and artificial waterways within the mangrove swamp and salt marsh, it is our view that wood storks could opportunistically forage



within some of the mosquito and drainage ditches and open-water impoundments that have suitable foraging conditions (shallow, [ $<15$  inches], fluctuating water levels with or without emergent vegetation). A review of recent aerial photographs indicates that manatees do not appear to have access to the majority of the proposed restoration sites. However, manatees do occur in Tampa Bay and near shore waters within installation boundaries. Raccoon Hammock and Broad Creek, the two natural tidal creeks present within the installation boundaries, drain into Tampa Bay and appear accessible to manatees. A large, artificial drainage canal at the eastern end of the project area also appears capable to supporting manatee use. A number of the proposed projects are located in areas that will require in-water transportation and staging of equipment and supplies. Such activities therefore have the potential to impact manatees.

MacDill AFB has acknowledged these potential impacts and determined with respect to the wood stork that such impacts are likely to be minor and short term, resulting primarily from temporary displacement. The installation has not identified breeding or roosting sites within the project area. MacDill AFB has identified sites in which the ecosystem restoration overlaps Environmental Restoration Program (ERP) sites, which are sites that may contain chemicals or other environmental contaminants that could potentially impact wood storks. As a result, MacDill AFB shall postpone ecosystem restoration in areas that have ongoing or proposed ERP activities. After ERP activities have been completed in an area, ecosystem restoration activities may begin. Based on the above, MacDill AFB determined that the proposed Ecosystem Restoration Master Plan may affect, but is not likely to adversely affect, wood storks.

Based on the description and conditions provided above and in the DEA, we concur with MacDill's determination that the proposed Ecosystem Restoration Master Plan may affect, but is not likely to adversely affect, wood storks.

With respect to the manatee, MacDill AFB has proposed incorporating the most recent Standard Manatee Conditions for In-Water Work into all restoration actions that involve in-water work. We concur with this proposal, but are of the opinion that other special conditions are needed to reduce the likelihood of take of a manatee to insignificant or discountable levels. MacDill AFB has agreed to incorporate the following additional recommendations into its DEA and project plans and specifications.

- restrict in-water work to the period from one half-hour after sunrise to one half-hour before sunset
- moor equipment and supply barges such that they do not represent a crushing hazard between barges or between a barge and the bottom of the waterway. Crushing hazards may be present when there is less than a four-foot clearance between barges, or between the bottom of the barge hull and the bottom of the waterway. Fenders providing a four-foot standoff at maximum compression may be used to address the crushing hazard between two barges. Barge load should be adjusted to water depth to provide the required amount of clearance

Although this does not represent a biological opinion as described in section 7 of the Act, it does fulfill the requirements of the Act, and no further action is required. Changes to the Master Plan, however, may increase the risk of adverse effects to a level at which take is reasonably certain to occur. MacDill AFB under such circumstances should consider seeking the assistance of this office to ascertain if additional section 7 consultation is needed.

### National Environmental Policy Act

MacDill AFB has proposed a phased, ecological restoration of 25 sites within its installation boundaries over a 10-year period. The Selection Standards for the Proposed Action as described in the DEA are as follows.

- improve water quality within the installation and Tampa Bay
- enhance and create wildlife habitat
- control and remove exotic/nuisance plant species
- earn wetland mitigation credits to offset wetland impacts from future installation projects.

MacDill AFB indicated that two of the proposed ecosystem restoration master plan sites, Sites 8 & 15, are planned for implementation in FY13 and have been fully designed and permitted. During the permitting process, MacDill completed a functional assessment of the ecologic lift that would result from the restoration of Sites 8 & 15 using the Unified Mitigation Assessment Method (UMAM). The DEA has been modified to provide the results of the functional assessment completed for Sites 8 & 15. MacDill has determined that the net ecologic change calculated for Sites 8 & 15 can be considered reasonably representative to the ecologic improvement that would be expected for any of the projects described in Ecosystem Restoration Master Plan. The functional assessment completed for Sites 8 & 15 clearly demonstrates that a net ecologic lift is predicted for the sites following restoration. As subsequent sites are planned for implementation, become fully designed, and go through the permitting process, a functional assessment of the ecologic lift that would result from their restoration would be accomplished using the UMAM as part of the permitting process.

We appreciate the opportunity to review and comment on the DEA. If you have any questions regarding this response, please contact Mr. John Milio of my staff at the address on the letterhead, by e-mail at [john\\_milio@fws.gov](mailto:john_milio@fws.gov), or by calling 904-731-3098.

Sincerely,



for Dawn Jennings  
Acting Field Supervisor





Tampa, Hillsborough County, Florida

1366112 -- ANDREW CHEN

**PUBLIC NOTICE - UNITED STATES AIR FORCE**

The Air Force (AF) seeks public comment on AF Environmental Impact Analysis Process (EIAP) documents for the Proposed Implementation of the Ecosystem Restoration Masterplan Projects at MacDill Air Force Base (AFB). The EIAP documents were previously made available for public review from June 18, 2012 to July 18, 2012. The Proposed Action is intended to restore and enhance the remaining natural estuarine ecosystem present throughout a significant portion of the southern Interbay Peninsula within MacDill AFB. The Proposed Action would include 25 multi-phase, multi-year mangrove wetland restoration projects that would restore the natural hydrology and enhance and create wildlife habitat while improving the overall function of the ecosystem. Impacts to wetland systems have been coordinated with Federal, state and county regulatory agencies. MacDill AFB has evaluated this action in accordance with Executive Order 11988 - Floodplain Management, and with Executive Order 11990 - Protection of Wetlands and believes there is no practical alternative to construction within the floodplain or jurisdictional wetlands.

**NOTICE OF AVAILABILITY**

The EIAP documents satisfy the requirements of the National Environmental Policy Act (NEPA). The documents are available for public review and comment from March 25, 2013 through April 24, 2013 at the Tampa/Hillsborough County Public Library, located at 900 N. Ashley Drive, Tampa, FL 33606. The documents may be found in the Humanities Section of the Main Library. Address written comments to the 6 AMW Public Affairs, 8209 Hangar Loop Drive, Suite 14, MacDill AFB, FL 3621-5502. The telephone number is (813) 828-2215.

590

March 25, 2013

**The Tampa Tribune**

Published Daily

Tampa, Hillsborough County, Florida

a }  
Hillsborough } SS.

Affiant's designated authority personally appeared C. Pugh, who on oath says that she is a Billing Analyst of The Tampa Tribune, a daily newspaper published in Hillsborough County, Florida; that the attached copy of the

Legal Notices ROP IN THE Tampa Tribune

of Legal Notices

as in said newspaper in the issues of

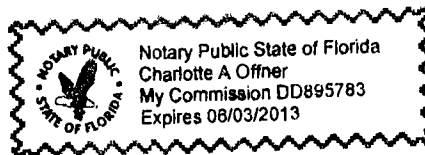
03/25/2013

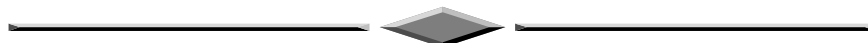
Affiant says that the said The Tampa Tribune is a newspaper published at Tampa in Hillsborough County, Florida, and that the said newspaper has heretofore been published in said Hillsborough County, Florida, each day and has been entered as second class mail matter at the post office in Tampa, in said Hillsborough County, Florida, on or about one year next preceding the first publication of the attached copy of the same; and affiant further says that she has neither paid nor promised any person, firm or corporation, for publication in the said newspaper.

Sworn to and subscribed by me, this 25 day  
of Mar, A.D. 2013

Personally Known ☒ or Produced Identification ☐  
Type of Identification Produced \_\_\_\_\_

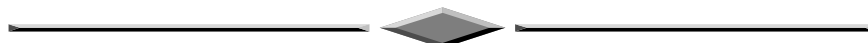
Charlotte A. Offner





## APPENDIX C

### HISTORIC AERIALS







1938



1948



1957

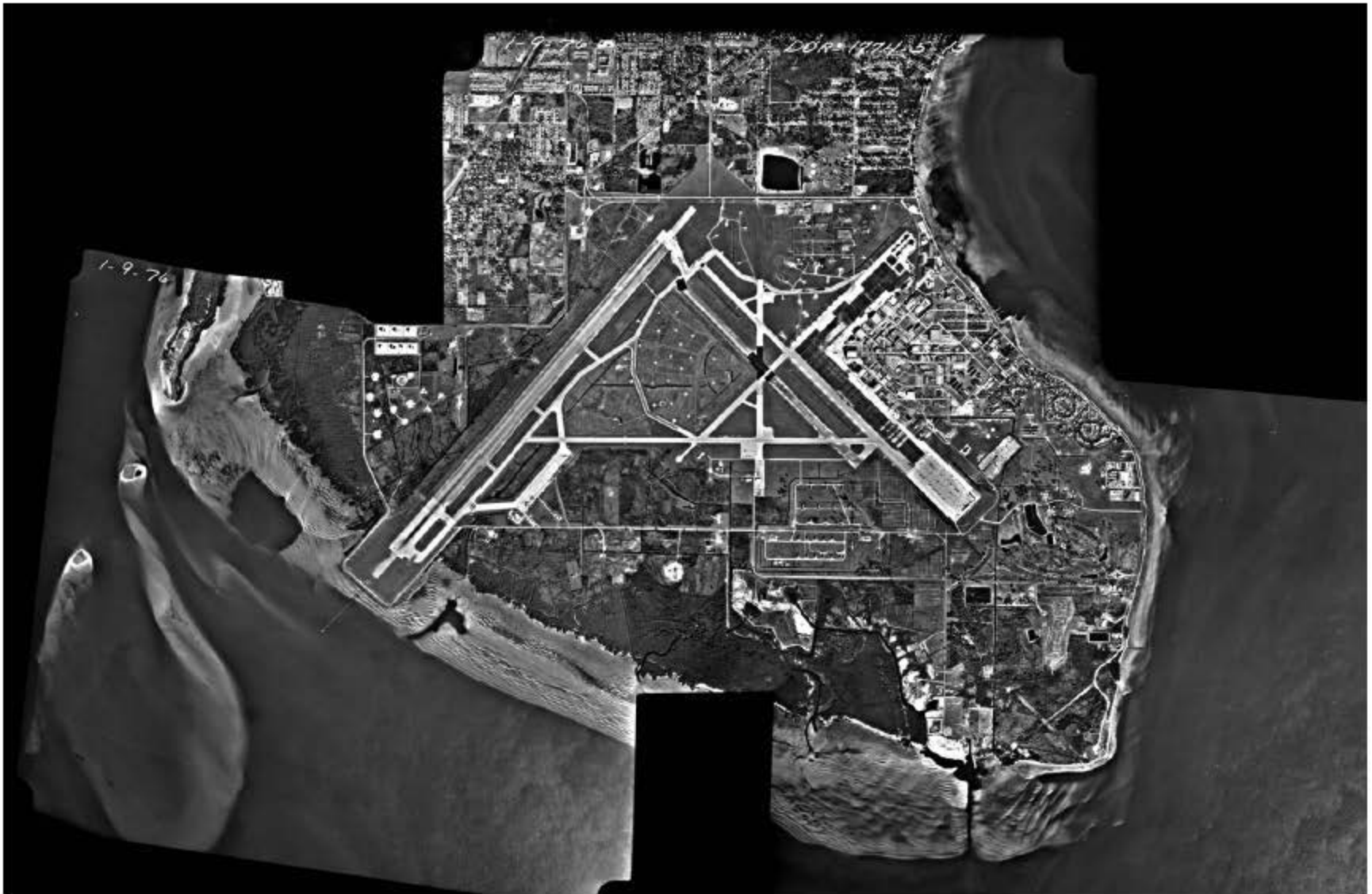




1965



1969



1976



1982



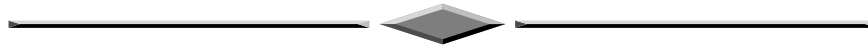
1987





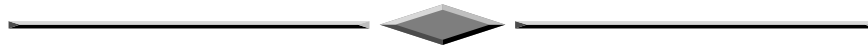
1991





## **APPENDIX D**

### **PROJECT SITE DATA SHEETS**







## **7.7.2 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 1 Data Sheet**

**Project Site #:** 1

**Priority:** Low\* (see Notes)

**Predecessors:** None

**Approximate Acreage:** 9.44

**Mitigation Credit Potential:** Moderate

**Project Description:** This Project Site is relatively isolated from the other projects. It is located in the eastern section of the overall project site, just west of the large canal with a boat basin referenced in 3.2 Existing Ecosystem Conditions. The project includes filling a series of manmade ditches that extend from a small saline pond down to the southern shoreline, running roughly parallel to the canal. The spoil mounds on either side of the ditches will be the source of fill. These mounds will be excavated to within 3 inches of the surrounding elevation. Removal of exotic vegetation, primarily Brazilian pepper, on the spoil mounds will be part of this project. Revegetation will occur naturally through secondary succession. This project will restore the natural sheet flow of tidal water across the mangrove forest swamp. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. The resultant mulch and debris will be relocated to an upland location. A hydro-axe may also be used if it can be transported to the site. Grading methods may include, but are not limited to hydro-blasting, heavy equipment, and hand-held equipment. This Project Site will require a small barge to transport equipment and personnel to the project site. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. It is not expected that any fill will need to be removed from this site. Please see Appendix D, Figures D.6 and D.8 for details.

**Anticipated Obstacles:** Site access is limited and will necessitate the use of a small barge. Additionally, the Project Site is located within the small arms range safety arc, so coordination with base personnel will be very important.

**Approximate Construction Costs:** \$236,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** There will be a small amount of temporary impacts to the sparse mangroves between the spoil mounds.

**Notes:** This area's ecological priority is rated as low. There is an opportunity to use this site for experimentation of construction techniques that may prove useful in subsequent projects. It is therefore recommended that it be given higher priority in anticipation of discovering more efficient methodologies for use in later projects.

### **7.7.3 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 2 Data Sheet**

**Project Site #:** 2

**Priority:** High

**Predecessors:** None

**Approximate Acreage:** 4.33

**Mitigation Credit Potential:** Moderate

**Project Description:** This project includes the removal of the spoil mound and ditch along the coastline. The mound will be excavated to the mean high water line. This proposed elevation is consistent with natural embankments in the vicinity that have the same wave energy. The drainage ditch will be filled with the material from the mound. Removal of exotic plants, primarily Brazilian pepper, from the spoil mound will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore the natural sheet flow of tidal water across the mangrove forest. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location. A hydro-axe may also be used if it can be transported to the site. The location of this area affords the opportunity to utilize hydro-blasting as a method of excavation and filling. The spoil material will be blasted into the drainage ditch landward of the mound. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. It is not expected that any fill will need to be removed from this site. Please see Appendix D, Figures D.4 – D.5 for details.

**Anticipated Obstacles:** Site access is limited and will necessitate a small barge to transport equipment and personnel. It is also located within the small arms range safety arc, so coordination with base personnel will be very important.

**Approximate Construction Costs:** \$108,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** There will be a small amount of temporary impacts to the sparse native species located on the spoil mound.

#### **7.7.4 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 3 Data Sheet**

**Project Site #:** 3

**Priority:** High

**Predecessors:** None

**Approximate Acreage:** 9.02

**Mitigation Credit Potential:** Moderate

**Project Description:** This project includes the removal of a spoil mound and ditch along the coastline. The mound will be excavated to the mean high water line. This proposed elevation is consistent with natural embankments in the vicinity that have the same wave energy. The ditch will be filled with the material from the mound. Removal of exotic plants, primarily Brazilian pepper, from the spoil mound will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore the natural sheet flow of tidal water across the mangrove forest. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location. A hydro-axe may also be used if it can be transported to the site. The location of this area affords the opportunity to utilize hydro-blasting as a method of excavation and filling. The spoil material will be blasted into the ditch landward of the mound. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. It is not expected that any fill will need to be removed from this site. Please see Appendix D, Figures D.4 – D.5 for details.

**Anticipated Obstacles:** Site access is limited and will necessitate a small barge to transport equipment and personnel. It is also located within the small arms range safety arc, so coordination with base personnel will be very important.

**Approximate Construction Costs:** \$226,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** There will be a small amount of temporary impacts to the sparse native species located on the spoil mound.

## **7.7.5 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 4 Data Sheet**

**Project Site #:** 4

**Priority:** High

**Predecessors:** None

**Approximate Acreage:** 4.65

**Mitigation Credit Potential:** Low

**Project Description:** The excavation of spoil mounds to either side of a series of manmade ditches will essentially widen the ditches creating new open water areas within the mangrove swamp. The mounds will be excavated to approximately 18 to 24 inches below mean high water. Removal of exotic plants, primarily Brazilian pepper, from the spoil mounds will be included in this project. Revegetation will occur naturally through secondary succession. The open water areas created by this project will help maintain tidal flooding of the salt marsh directly north of the area and will provide foraging and nursery habitat for fish, wading birds, and waterfowl. Efforts will be made to create a meandering path for the water feature by excavating more on one side of the existing ditches. Partially isolated ponds may be created adjacent to the main channels to create still water areas.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location. A hydro-axe may also be used if it is feasible. The excavation work will be accomplished using a small track hoe. Existing spoil material will be used to create a temporary road along the ditches. The track hoe will then begin excavating south to north, removing the road as it backs out of the area. The excavated material will be removed by truck for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. There will be approximately 138,600 cubic feet (5,130 cubic yards) of fill removed from this site. This is a rough approximation based on a uniform distribution of spoil mounds. Please see Appendix D, Figures D.6 and D.9 for details.

**Anticipated Obstacles:** None anticipated.

**Approximate Construction Costs:** \$116,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor

earthwork. In addition, the area will need to be monitored for unanticipated shoaling or scouring that may require recontouring.

**Wetland Impacts:** There will temporary impacts to the wetland area as it is converted from mangrove forest to open water brackish habitat.

## **7.7.6 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 5 Data Sheet**

**Project Site #:** 5

**Priority:** High

**Predecessors:** None

**Approximate Acreage:** 4.49

**Mitigation Credit Potential:** Moderate

**Project Description and Goals:** This project includes the removal of spoil mounds and ditches along the coastline. The spoil mounds will be excavated to the mean high water line. The proposed elevation is consistent with natural embankments in the vicinity that have the same type of wave energy. The drainage ditch will be filled with the material from the mound. Removal of exotic plants, primarily Brazilian pepper, from the spoil mounds will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore the natural sheet flow of tidal water across the mangrove forest. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location for disposal. A hydro-axe may also be used if it can be transported to the site. The location of this area affords the opportunity to utilize hydro-blasting as a method of excavation and filling. The spoil material will be blasted into the drainage ditch landward of the mound. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. It is not expected that any fill will need to be removed from this site. Please see Appendix D, Figures D.4 – D.5 for details.

**Anticipated Obstacles:** Site access is limited and will necessitate a small barge to transport equipment and personnel.

**Approximate Construction Costs:** \$112,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** There will be a small amount of temporary impacts to the sparse native species located on the spoil mound.



### **7.7.7 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 6 Data Sheet**

**Project Site #:** 6

**Priority:** High

**Predecessors:** None

**Approximate Acreage:** 1.03

**Mitigation Credit Potential:** Moderate

**Project Description:** This project will include removal of a spoil mound and manmade ditch along the coastline. The mound will be excavated to the mean high water elevation. This proposed elevation is consistent with natural embankments in the vicinity that have similar wave energy fetch. The ditch will be filled with the material from the mound. Removal of exotic plants, primarily Brazilian pepper, from the spoil mound will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore the natural sheet flow of tidal water across the mangrove swamp. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland site. A hydro-axe may also be used if it can be transported to the site. The location of this project affords the opportunity to utilize hydro-blasting as a method of excavation and filling. The spoil material will be blasted into the drainage ditch landward of the mound. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. It is not expected that any fill will need to be removed from this site. Please see Appendix D, Figures D.4 – D.5 for details.

**Anticipated Obstacles:** Site access is limited and will necessitate a small barge to transport equipment and personnel. A portion of this Project Site is within a former chemical munitions landfill, one of the Solid Waste Management Units (SWMU), and all work will require coordination with appropriate base personnel.

**Approximate Construction Costs:** \$26,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** There will be a small amount of temporary impacts to the sparse native species located on the spoil mound.

## **7.7.8 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 7 Data Sheet**

**Project Site #:** 7

**Priority:** High

**Predecessors:** None

**Approximate Acreage:** 0.84

**Mitigation Credit Potential:** Moderate

**Project Description:** This phase will remove a spoil mound and manmade ditch from along the coastline. The mound will be excavated to the mean high water elevation. This proposed elevation is consistent with natural embankments in the vicinity that have similar wave energy. The ditch will be filled with the material from the mound. Removal of exotic plants, primarily Brazilian pepper, from the spoil mound will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore the natural sheet flow of tidal water across the mangrove forest. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland site. A hydro-axe may also be used if it can be transported to the site. The location of this project affords the opportunity to utilize hydro-blasting as a method of excavation and filling. The spoil material will be blasted into the ditch landward of the mound. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. It is not expected that any fill will need to be removed from this site. Please see Appendix D, Figures D.4 – D.5 for details.

**Anticipated Obstacles:** Site access is limited and may necessitate a small barge to transport equipment and personnel. This entire Project Site is within a former chemical munitions landfill, one of the Solid Waste Management Units (SWMU), and all work will require coordination with the appropriate base personnel.

**Approximate Construction Costs:** \$21,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** There will be a small amount of temporary impacts to the sparse native species located on the spoil mound.

## **7.7.9 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 8 Data Sheet**

**Project Site #:** 8

**Priority:** High

**Predecessors:** 15

**Approximate Acreage:** 5.70

**Mitigation Credit Potential:** Moderate

**Project Description and Goals:** This project includes filling a mosquito ditch and the excavation of associated spoil mounds. It is located between the upland and mangrove swamp. The spoil mounds on either side of the ditch will be the source of fill. These mounds will be excavated to within 3 inches of the surrounding elevation. Removal of exotic plants, primarily Brazilian pepper, from the spoil mounds will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore the natural sheet flow of fresh water from the upland through the mangrove swamp. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location. A hydro-axe may also be used if it is feasible. The excavation work will be accomplished using a small track hoe. Spoil material will be used to fill the ditch and excess will be removed by truck for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. It is not expected that any fill will need to be removed from this site. Please see Appendix D, Figures D.6 and D.8 for details.

**Anticipated Obstacles:** Portions of this project are within the explosive ordinance safety arcs and will require coordination with base personnel.

**Approximate Construction Costs:** \$142,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** There will be a small amount of temporary impacts to the sparse mangroves between the spoil mounds.

## **7.7.10 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 9 Data Sheet**

**Project Site #:** 9

**Priority:** High

**Predecessors:** None

**Approximate Acreage:** 2.63

**Mitigation Credit Potential:** Moderate

**Project Description:** This project includes a ditch and associated spoil mounds. It is located along the boundary of upland to the north and mangrove swamp to the south. This project consists of filling the ditch using the spoil material that comprises the mounds. All excess material will be transported to an upland location. The mounds will be excavated to within 3 inches of the surrounding elevation. Removal of exotic vegetation, primarily Brazilian pepper, from the spoil mounds will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore the natural sheet flow of fresh water from the upland through the mangrove forest. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location. A hydro-axe may also be used if it is feasible. The excavation work will be accomplished using a small track hoe. Spoil material will be used to fill the ditch, and excess will be removed by truck for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards in adjacent waters. It is not expected that any fill will need to be removed from this site. Please see Appendix D, Figures D.6 and D.8 for details.

**Anticipated Obstacles:** Portions of this project are within the explosive ordinance safety arcs and will require coordination with base personnel.

**Approximate Construction Costs:** \$65,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** There will be a small amount of temporary impacts to the sparse mangroves between the spoil mounds.

## **7.7.11 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 10 Data Sheet**

**Project Site #:** 10

**Priority:** Moderate

**Predecessors:** None

**Approximate Acreage:** 2.28

**Mitigation Credit Potential:** High

**Project Description:** This Project Site is a large spoil berm created from the dredged canal. It is located along the western edge of the large drainage canal. This project includes removal of the spoil material and upland vegetation. The berm will be excavated to within 3 inches of the adjacent elevations. Several sections will be excavated to below mean high water to improve the exchange of tidal waters with the natural creek system to the west. Removal of exotic plants, primarily Brazilian pepper, from the spoil mounds will be included in this project. Mangroves will be installed along the canal shoreline to help stabilize the substrate. Revegetation will occur naturally through secondary succession throughout the remaining portions of the site. This project will restore former mangrove swamp habitat. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** The initial clearing of vegetation will be accomplished using a hydro-axe and by hand where necessary. The amount of material to be removed will require heavy equipment. Track hoes will be used to excavate the material and transfer it to trucks for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards in adjacent waters. There will be approximately 378,000 cubic feet (14,000 cubic yards) of fill removed from this site. This is a rough approximation based on a uniform size of the spoil berm. Please see Appendix D, Figures D.1 – D.2 for details.

**Anticipated Obstacles:** None anticipated

**Approximate Construction Costs:** \$57,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** There may be a small amount of temporary impacts to the mangroves along the shoreline. This will be carefully managed to minimize impact.

## **7.7.12 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 11 Data Sheet**

**Project Site #:** 11

**Priority:** Low

**Predecessors:** 9, 10

**Approximate Acreage:** 1.96

**Mitigation Credit Potential:** High

**Project Description:** This project includes the removal of a large spoil berm created with material from the dredged canal. It is located along the western edge of the large canal. This project consists of removing the spoil material and upland vegetation. The berm will be excavated to the Mean High Water (MHW) line on the canal side and existing grade, estimated at 4 feet above the MHW on the upland side. Removal of exotic plants, primarily Brazilian pepper, from the spoil mound will be included in this project. Mangroves will be planted to help stabilize the shoreline, but further revegetation will occur naturally through secondary succession. This project will create a littoral zone that will function as wildlife habitat. It will also aid in improving water quality by removing the steep and eroding bank present and create a vegetation zone that will filter nutrients from the water. Exotic plant species should be partially excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control

**Construction Method:** Initial clearing of vegetation will be accomplished using a hydro-axe, and hand clearing where necessary. All resultant mulch and debris will be transported to an upland location. The amount of material to be removed will require heavy equipment. Track hoes will be used to excavate the material and transfer it to trucks for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to maintain surrounding water quality standards. There will be approximately 191,000 cubic feet (7,100 cubic yards) of fill removed from this site. This is a rough approximation based on a uniform size of the spoil berm. Please see Appendix D, Figures D.1 and D.3 for details.

**Anticipated Obstacles:** None anticipated.

**Approximate Construction Costs:** \$49,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.



**Wetland Impacts:** There may be a small amount of temporary impacts to the mangroves along the shoreline. This will be carefully managed to minimize impact.

### **7.7.13 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 12 Data Sheet**

**Project Site #:** 12

**Priority:** Moderate

**Predecessors:** None

**Approximate Acreage:** 2.80

**Mitigation Credit Potential:** Moderate

**Project Description:** This Project Site includes a spoil mound that was created from the material generated during the dredging of the canal. It is located along the eastern shore of Broad Creek. This project consists of removing spoil material and upland vegetation. The mounds will be excavated to within 3 inches of the surrounding elevation. Removal of exotic plants, primarily Brazilian pepper, from the spoil mound will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore former mangrove swamp habitat. Re-establishment of exotic plant species should be prevented by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location for disposal. A hydro-axe may also be used if it can be transported to the site. The amount of material to be removed will require heavy equipment such as a small track hoe and crane with a clamshell. Deep water around the project boundaries will require the use of a barge to transport equipment and personnel to the work area. Due to the size of the Project Site, a crane will not be able to reach the entire mound from a barge. If the crane can be moved onto the mound it may be able to service the entire area. A small track hoe may be easier to move onto the mound in order to move fill for the crane to reach. The use of a portable conveyor belt system may also prove useful. A shallow draft barge will be required to move the spoil material to an upland location. The material will need to be transferred to land-based trucks for conveyance to its final destination. The specific final destination will be determined at a later date. Trucks may be able to utilize an upland restoration site located to the north to decrease transit time for the barge. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. Approximately 244,000 cubic feet (9,000 cubic yards) of material will be removed from this site.

**Anticipated Obstacles:** Site access is limited and will necessitate the use of a barge to transfer equipment and personnel to the work site and spoil from the work site. It is also located within the small arms range safety arc, so coordination with base personnel will be very important.

**Approximate Construction Costs:** \$70,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project, and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** Temporary impacts to the mangroves will occur at the points of access where construction equipment is loaded onto and unloaded from the mound.

#### **7.7.14 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 13 Data Sheet**

**Project Site #:** 13

**Priority:** Moderate

**Predecessors:** None

**Approximate Acreage:** 7.17

**Mitigation Credit Potential:** Moderate

**Project Description:** This Project Site includes spoil mounds created by material from the dredged canal. It is located along the eastern shore of Broad Creek. This project consists of removing spoil material and upland vegetation. The mounds will be excavated to within 3 inches of the surrounding elevation. Removal of exotic plants, primarily Brazilian pepper, will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore former mangrove swamp habitat. Exotic plant species should be prevented by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location for disposal. A hydro-axe may be used if it can be transported to the site. The amount of material to be removed will require heavy equipment such as a small track hoe and crane with a clamshell. Deep water along the project boundaries will require the use of a barge to transport equipment and personnel to the work area. Due to the size of the Project Site, a crane will not be able to reach the entire mound from a barge. If the crane can be moved onto the mound it may be able to service the entire area. A small track hoe may be easier to move onto the mound in order to move fill for the crane to reach. The use of a portable conveyor belt system may also prove useful. A shallow draft barge will be required to move the spoil material to an upland location. The material will need to be transferred to land-based trucks for conveyance to its final destination, which will be determined at a later date. Trucks may be able to utilize an upland restoration site located just north of the site to decrease transit time for the barge. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. Approximately 618,500 cubic feet (22,900 cubic yards) of material will be removed from this site.

**Anticipated Obstacles:** Site access is limited and will necessitate use of a barge to transfer equipment and personnel to the work site, and spoil from the work site. It is also located within the small arms range safety arc, so coordination with base personnel will be very important.

**Approximate Construction Costs:** \$179,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid

data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** Temporary impacts to the mangroves will occur at the points of access where construction equipment is loaded onto and unloaded from the mound.

## **7.7.15 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 14 Data Sheet**

**Project Site #:** 14

**Priority:** Low

**Predecessors:** None

**Approximate Acreage:** 19.12

**Mitigation Credit Potential:** Moderate

**Project Description:** This project includes exotic and nuisance vegetation removal, primarily Brazilian pepper and melaleuca, from a historical hydric hammock surrounded by mangrove forest and a former spoil disposal area.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** All invasive species will be cut and sprayed by hand. The debris may be chipped or burned to allow space for native species to propagate. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters.

**Anticipated Obstacles:** Site access is limited by surrounding canals and will necessitate a small barge. This project is located within the small arms range safety arc and will require coordination with the appropriate base personnel.

**Approximate Construction Costs:** \$143,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control and supplemental plantings.

**Wetland Impacts:** There are no anticipated impacts to the adjacent wetlands.

**Notes:** The approximate construction costs for this site are based on \$7,500 per acre for exotic plant removal only.

## **7.7.16 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 15 Data Sheet**

**Project Site #:** 15

**Priority:** Moderate

**Predecessors:** None

**Approximate Acreage:** 3.70

**Mitigation Credit Potential:** Low

### **Project Description:**

- **Project 15a:** The initial step in this two-part project includes excavation within existing wetlands to prepare a hydrologic connection between existing tidal waters and new open water areas that will be created during the second part of this project. The areas proposed for excavation will be graded to approximately 18 inches below mean high water and will be allowed to revegetate through secondary succession.
- **Project 15b:** The second part of this project includes excavation of spoil mounds on either side of a series of manmade ditches, in effect widening the ditches and creating new open water areas within the mangrove swamp. The mounds will be excavated to approximately 18 inches below mean high water. Removal of exotic plants, primarily Brazilian pepper, from the spoil mounds will be included in this project. Revegetation will occur naturally through secondary succession. The open water areas created by this project will provide foraging and nursery habitat for fish, wading birds, and waterfowl.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

### **Construction Method:**

- **Project 15a:** All excavation for this project will commence near the waterward limits of the project area and proceed in a landward direction, typically south to north. The excavation work will be accomplished using a small track hoe. If it is determined to be necessary to reach the most waterward extent of the project area, a temporary fill road will be constructed. As the excavation proceeds landward, the fill road and all resultant spoil material will be removed and transported to an upland location. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters.
- **Project 15b:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location. A hydro-axe may also be used if it is feasible. The excavation work will be accomplished using a small track hoe that will access the site along a temporary road constructed with spoil mound material. The track hoe will then begin excavating in a landward direction, removing the road as it backs out of the area. The excavated material will be removed by truck for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain

water quality standards within adjacent waters. There will be approximately 132,600 cubic feet (4,910 cubic yards) of fill removed from this site. This is a rough approximation based on a uniform size of the spoil berm. Please see Appendix D, Figures D.6 and D.9 for details

**Anticipated Obstacles:** Portions of this project are within the explosive ordinance safety arcs and will require coordination with base personnel.

**Approximate Construction Costs:** \$93,000

**Project Maintenance and Monitoring:**

- **Project 15a:** The area will need to be monitored for unanticipated erosion, shoaling, or scouring that may require additional earthwork. Maintenance needs will be identified during monitoring events.
- **Project 15b:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control and supplemental plantings. In addition, the newly contoured waterway will need to be monitored for unanticipated erosion, shoaling, or scouring that may require additional earthwork.

**Wetland Impacts:**

- **Project 15a:** There will temporary impacts to the wetland area as it is converted from mangrove swamp to open water brackish habitat.
- **Project 15b:** There will be a small amount of temporary impacts to the sparse mangroves between the spoil mounds.



## **7.7.17 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 16 Data Sheet**

**Project Site #:** 16

**Priority:** Moderate

**Predecessors:** None

**Approximate Acreage:** 13.75

**Mitigation Credit Potential:** Low

### **Project Description:**

- **Project 16a:** The project includes the filling of a manmade ditch and removing the excess spoil material from an existing mangrove swamp. The spoil mounds on either side of the ditch will be the source of fill. These mounds will be excavated to within 3 inches of the surrounding elevation. Removal of exotic plants, primarily Brazilian pepper, from the spoil mounds will be included in this project. Revegetation will occur naturally through secondary succession. Exotic plant species should be excluded by the restored elevations and hydrologic regime.
- **Project 16b:** The excavation of spoil mounds to either side of a series of manmade ditches will essentially widen the ditches creating new open water areas within the mangrove swamp. These mounds will be excavated to approximately 18 to 36 inches below mean high water. The water depth will become shallower the further from the existing open water. Removal of exotic plants, primarily Brazilian pepper, from the spoil mounds will be included in this project. Revegetation will occur naturally through secondary succession. The open water areas created by this project will provide foraging and nursery habitat for fish, wading birds, and waterfowl. Efforts will be made to create a meandering path for the water feature by excavating more on one side of the existing ditches. Partially isolated ponds may be created adjacent to the main channels to create still water areas.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

### **Construction Method:**

- **Project 16a:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location. A hydro-axe may also be used if it is feasible. The excavation work will be accomplished using a small track hoe. Spoil material will be used to fill the ditch and excess will be removed by truck for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. It is not expected that any fill will need to be removed from this site. Please see Appendix D, Figures D.6 and D.8 for details.

- **Project 16b:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location. A hydro-axe may also be used if it is feasible. The excavation work will be accomplished using a small track hoe. Existing spoil material will be used to create a temporary road along the ditches. The track hoe will then begin excavating south to north, removing the road as it backs out of the area. The excavated material will be removed by truck for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. There will be approximately 358,800 cubic feet (13,300 cubic yards) of fill removed from this site. This is a rough approximation based on a uniform distribution of spoil mounds. Please see Appendix D, Figures D.6 and D.9 for details.

**Anticipated Obstacles:** None anticipated.

**Approximate Construction Costs:** \$344,000

**Project Maintenance and Monitoring:**

- **Project 16a:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.
- **Project 16b:** The area will need to be monitored for unanticipated erosion, shoaling, or scouring that may require additional earthwork.

**Wetland Impacts:**

- **Project 16a:** There will be a small amount of temporary impacts to the sparse mangroves between the spoil mounds.
- **Project 16b:** There will be temporary impacts to the wetland area as it is converted from mangrove forest to open water brackish habitat.

## **7.7.18 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 17 Data Sheet**

**Project Site #:** 17

**Priority:** Moderate

**Predecessors:** None

**Approximate Acreage:** 3.18

**Mitigation Credit Potential:** Moderate

**Project Description:** The project includes the filling of a manmade ditch and removing the excess spoil material from within an existing mangrove swamp. The spoil mounds on either side of the ditch will be the source of fill. These mounds will be excavated to within 3 inches of the surrounding elevation. Removal of exotic plants, primarily Brazilian pepper, from the spoil mounds will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore the natural sheet flow of tidal water through the mangrove swamp. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location. A hydro-axe may also be used if it is feasible. The excavation work will be accomplished using a small track hoe. Spoil material will be used to fill the ditch and excess will be removed by truck for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. It is not expected that any fill will need to be removed from this site. Please see Appendix D, Figures D.6 and D.8 for details.

**Anticipated Obstacles:** None anticipated.

**Approximate Construction Costs:** \$80,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** There will be a small amount of temporary impacts to the sparse mangroves between the spoil mounds.

## **7.7.19 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 18 Data Sheet**

**Project Site #:** 18

**Priority:** Moderate

**Predecessors:** 17

**Approximate Acreage:** 6.85

**Mitigation Credit Potential:** Low

**Project Description:** This project will take place within a salt marsh located at the transition zone between the upland and mangrove forest. The project includes filling a manmade ditch to match adjacent elevations and removing the excess spoil material. The spoil mounds on either side of the ditch will be the source of fill. Removal of exotic plants, primarily Brazilian pepper, from the spoil mounds will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore the natural sheet flow of tidal water through the mangrove forest. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location. A hydro-axe may also be used if it is feasible. The excavation work will be accomplished using a small track hoe. Spoil material will be used to fill the ditch and excess will be removed by truck for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. It is not expected that any fill will need to be removed from this site, but this area contains an uneven distribution of spoil mounds. Many are larger than others and this may necessitate a topographic survey to determine if material needs to be transported from the project site. Please see Appendix D, Figures D.6, D.8, D.10 and D.12 for details.

**Anticipated Obstacles:** A portion of the Project Site is within a former landfill, one of the Solid Waste Management Units (SWMU), and all work will require coordination with those managers.

**Approximate Construction Costs:** \$171,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** There will be a small amount of temporary impacts to the sparse mangroves between the spoil mounds. The mangroves in the ditches will be replaced with marsh species such as needle rush (*Juncus roemarianus*), purslane (*Sesuvium sp.*) and sea-oxeye daisy (*Borrchia frutescens*).

## **7.7.20 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 19 Data Sheet**

**Project Site #:** 19

**Priority:** Moderate

**Predecessors:** 4

**Approximate Acreage:** 5.37

**Mitigation Credit Potential:** Low

**Project Description:** This project includes filling a series of manmade ditches and removing the excess spoil material from within a salt marsh located along the transition zone between uplands and mangrove swamp. The spoil mounds on either side of the ditches will be the source of fill. These ditches and spoil mounds will be graded to the surrounding elevation. Removal of exotic plants, primarily Brazilian pepper, from the spoil mounds will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore the natural sheet flow of tidal water through the mangrove forest. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location. A hydro-axe may also be used if it is feasible. The excavation work will be accomplished using a small track hoe. Spoil material will be used to fill the ditch and excess will be removed by truck for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. It is not expected that any fill will need to be removed from this site, but this area contains an uneven distribution of spoil mounds. Many are larger than others and this may necessitate a topographic survey to determine if material needs to be transported from the project site. Please see Appendix D, Figures D.6, D.8, D.10 and D.12 for details.

**Anticipated Obstacles:** A portion of the Project Site is within a former landfill, one of the Solid Waste Management Units (SWMU), and all work will require coordination with appropriate base personnel.

**Approximate Construction Costs:** \$134,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** There will be a small amount of temporary impacts to the sparse mangroves between the spoil mounds. The mangroves in the ditches will be replaced with marsh species such as needle rush (*Juncus roemarianus*), purslane (*Sesuvium sp.*) and sea-oxeye daisy (*Borrchia frutescens*).

## **7.7.21 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 20 Data Sheet**

**Project Site #:** 20

**Priority:** Moderate

**Predecessors:** None

**Approximate Acreage:** 18.24

**Mitigation Credit Potential:** Moderate

**Project Description:** This project includes filling a series of manmade ditches and removing the excess spoil material from within a salt marsh located along the transition zone between uplands and mangrove swamp. The spoil mounds on either side of the ditch will be the source of fill. These ditches and spoil mounds will be graded to match the surrounding elevation and the ditches will be filled to that elevation. Removal of exotic plants, primarily Brazilian pepper, from the spoil mounds will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore the natural sheet flow of tidal water through the mangrove forest. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location. A hydro-axe may also be used if it is feasible. The excavation work will be accomplished using a small track hoe. Spoil material will be used to fill the ditch and excess will be removed by truck for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. It is not expected that any fill will need to be removed from this site, but this area contains an uneven distribution of spoil mounds. Many are larger than others and this may necessitate a topographic survey to determine if material needs to be transported from the project site. Please see Appendix D, Figures D.6, D.8, D.10 and D.12 for details.

**Anticipated Obstacles:** A portion of this Project Site is within a former chemical munitions landfill, one of the Solid Waste Management Units (SWMU), and all work will require coordination with appropriate base personnel.

**Approximate Construction Costs:** \$456,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may



include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** There will be a small amount of temporary impacts to the sparse mangroves between the spoil mounds. The mangroves in the ditches will be replaced with marsh species such as needle rush (*Juncus roemarianus*), purslane (*Sesuvium sp.*) and sea-oxeye daisy (*Borrchia frutescens*).

## **7.7.22 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 21 Data Sheet**

**Project Site #:** 21

**Priority:** Low

**Predecessors:** None

**Approximate Acreage:** 18.23

**Mitigation Credit Potential:** Moderate

**Project Description:** This Project Site was formerly a tidal mangrove swamp with saltern fringes. Manmade ditches have impacted the flow of water across the site. This impact, combined with upland disturbances, has eliminated the fringing saltern habitat. This project consists of filling the ditch, the removal of excess spoil material, and the maintenance of an upstream culvert. The spoil mounds on either side of the ditch will be the source of fill. These mounds will be excavated to within 3 inches of the surrounding elevation. Removal of exotic plants, primarily Brazilian pepper, from the spoil mounds will be included in this project. Revegetation will occur naturally through secondary succession. This project will help to restore the natural flow of water through the mangrove swamp. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

The road directly north of the Project Site prevents any natural sheet flow of runoff from adjacent uplands through the site. A drainage culvert that discharges into the wetland is located under the road and would be evaluated to determine if it is sufficiently sized, installed, and maintained. If an analysis determines that the culvert is appropriately sized and installed, then it will simply be maintained. Ongoing maintenance of this culvert will improve drainage from the impoundment created by the road and allow freshwater flushing of the wetland during storm events. While not a natural sheetflow, this will at least restore some of the area's hydrologic connection to the upland. If the culvert is inadequate, a redesign should be considered and additional culverts may be added. The installation of a control device should also be considered at this culvert in order to limit the backflow of salt water into the area north of the road. This proposed installation must be evaluated by a civil engineer and will require a topographic survey.

The historic saltern habitat falls within the area designated for future work. Restored hydrology will be examined for the ability to support salterns. The restoration of this area must follow the completion of the on-site rubble environmental cleanup.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location for disposal. A hydro-axe may be used if feasible. The excavation work will be accomplished using a small track hoe. Spoil material will be used to fill the ditch and any excess removed by truck for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality

standards in adjacent waters. It is not expected that any fill will need to be removed from this site. Please see Appendix D, Figures D.6 and D.8 for details.

**Anticipated Obstacles:** Portions of this Project Site fall into the small arms range safety arc. This will necessitate careful coordination with base personnel. Other portions are within the explosive ordinance safety arcs and will also require coordination with base personnel. The entire Project Site is within a former construction debris landfill, a Solid Waste Management Unit (SWMU), and all work should be coordinated with those managers.

**Approximate Construction Costs:** Variable depending on culvert and drainage calculations.

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork. In addition, the above-referenced culvert and any additional control structures should be inspected periodically to ensure they are functioning as designed.

**Wetland Impacts:** There will be a small amount of temporary impacts to the sparse mangroves between the spoil mounds.

### **7.7.23 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 22 Data Sheet**

**Project Site #:** 22

**Priority:** Low

**Predecessors:** none

**Approximate Acreage:** 17.69

**Mitigation Credit Potential:** Moderate

**Project Description and Goals:** This Project Site is primarily a spoil area created from the dredging of the adjacent canal. This project includes removal of spoil material and upland vegetation, and restoration of the saltern habitat that once existed in the Project Site. The mounds will be excavated slightly below surrounding elevations to create a shallow pan that will flood during extreme high tides. A berm will be constructed around the area to partially contain the tidal floodwater. A control structure may also be an option to more directly regulate hydrology in the area. This may be simply an area of the berm constructed of sandbags to be added or removed until the proper hydrology is achieved then a permanent berm will be constructed. Grading of this area will be critical to ensure that proper elevations are constructed. Removal of exotic plants, primarily Brazilian pepper, on the spoil mound will be included in this project. Mangroves will be planted to maintain the berms but further revegetation will occur naturally through secondary succession. Exotic plant species will be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** The area will be surveyed thoroughly prior to construction and tidal elevations precisely measured. The existing vegetation will be removed with heavy machinery including root raking to allow the finished grade to be precisely contoured. GPS guided bulldozers will grade the site to produce the shallow pan and surrounding berm. All excess fill material will be transported to an upland location. Mangroves will be planted along the shoreward berm to stabilize the soil. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards in adjacent waters.

**Anticipated Obstacles:** Portions of this Project Site fall into the small arms range safety arc so coordination with base personnel will be very important. Portions of the Project Site are within a former rubble landfill and former firing range, two of the Solid Waste Management Units (SWMU), and all work should be coordinated with those managers. The precise duration and frequency of saltwater flooding is an essential component to the restoration of a saltern. This project may require several post construction adjustments before the hydrology is appropriately suited for the saltern habitat.

**Approximate Construction Costs:** \$442,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the

pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork. In addition, the restored salterns should be inspected periodically to document hydrology and wildlife utilization. Berms should be inspected for erosion, and control structures should be inspected to ensure they are functioning as designed.

**Wetland Impacts:** Most of this area has been converted to upland so there will be little or no impact to wetland habitat.

## **7.7.24 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 23 Data Sheet**

**Project Site #:** 23

**Priority:** Low

**Predecessors:** None

**Approximate Acreage:** 35.89

**Mitigation Credit Potential:** Moderate

**Project Description:** This Project Site is primarily a spoil area created from the dredging of the adjacent canal. Portions of an historic saltern habitat persist on this site. This project consists of removing spoil material and upland vegetation and restoring the saltern habitat to its former size and function. The spoil will be excavated slightly below surrounding elevations to create a shallow pan that will flood during extreme high tides. A berm will be constructed around the area to partially contain the tidal floodwater. A control structure may also be an option to more directly regulate hydrology in the area. Grading of this area will be critical to ensure that proper elevations are constructed. Removal of exotic plants, primarily Brazilian pepper, from the spoil mound will be included in this project. Mangroves will be planted to maintain the berms but further revegetation will occur through secondary succession. Exotic plant species should be excluded by the restored elevations and hydrologic regime.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** The area will be surveyed thoroughly prior to construction and tidal elevations precisely measured. The existing vegetation will be removed with heavy machinery including root raking to allow the finished grade to be precisely contoured. GPS guided bulldozers will grade the site to produce the shallow pan and surrounding berm. Mangroves will be planted along the shoreward berm to stabilize the soil. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters.

**Anticipated Obstacles:** Portions of this Project Site fall into the small arms range safety arc, so coordination with base personnel will be very important. In addition, the precise duration and frequency of saltwater flooding is an essential component to the restoration of a saltern. This project may require several post construction adjustments before the hydrology is appropriately suited for the saltern habitat.

**Approximate Construction Costs:** Variable based on MacDill AFB use of the area for fill disposal.

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor

earthwork. In addition, the restored salterns should be inspected periodically to document hydrology and wildlife utilization. Berms should be inspected for erosion, and control structures should be inspected to ensure they are functioning as designed.

**Wetland Impacts:** There may be a small amount of temporary impact to the existing saltern area, but every effort will be made to minimize this disturbance.

**Notes:** Portions of this site have recently become fill disposal areas. Coordination with base planners may eliminate some or all of this Project Site from the Masterplan.

## **7.7.25 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 24 Data Sheet**

**Project Site #:** 24

**Priority:** High

**Predecessors:** None

**Approximate Acreage:** 6.43

**Mitigation Credit Potential:** Moderate

**Project Description:** This project is located in the upland area north of the mangrove forest. This project includes filling a manmade ditch and removing the excess spoil material. The spoil mounds on either side of the ditch will be the source of fill. These mounds will be excavated to within 3 inches of the surrounding elevation. Removal of exotic plants, primarily Brazilian pepper, from the spoil mounds will be included in this project. Revegetation will occur naturally through secondary succession. This project will restore the natural sheet flow of fresh water across the upland southward to the mangrove forest.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control.

**Construction Method:** Existing vegetation, primarily Brazilian pepper, will be cleared from the spoil mounds by hand cutting and chipping on site. All resultant mulch and debris will be transported to an upland location. A hydro-axe may also be used if it is feasible. The excavation work will be accomplished using a small track hoe. Spoil material will be used to fill the ditch and excess will be removed by truck for conveyance to its final destination. This destination is to be determined at a later date. This project could be constructed concurrently with Project 25. The benefits to this include the availability of additional fill from Project 25, if needed. Additionally, the material from Project 25 may be of better quality, in which case it would be the preferable fill source. Geotechnical testing will be conducted at the time of construction to determine the best course of action. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. It is not expected that any fill will need to be removed from this site. Please see Appendix D, Figures D.6 and D.8 for details.

**Anticipated Obstacles:** Portions of this project are within the explosive ordinance safety arcs and will require coordination with base personnel. The majority of this project will take place within a former landfill. Other sections are located within a former chemical warfare training and storage area. These are two of the Solid Waste Management Units (SWMU) and all work should be coordinated with those managers.

**Approximate Construction Costs:** \$161,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may



include additional nuisance and exotic species control, supplemental plantings, and minor earthwork.

**Wetland Impacts:** This project will involve permanent impacts to the wetlands that were created when the ditch was excavated. Although removing this ditch will improve the overall hydrological function in the area, a mitigation plan may be required to offset the unavoidable impacts to the ditch. However, if this project is combined with one or more other projects, the net impacts may be sufficiently offset by the net environmental benefits.

## **7.7.26 MacDill AFB Ecosystem Restoration Conceptual Masterplan Project Site 25 Data Sheet**

**Project Site #:** 25

**Priority:** High

**Predecessors:** 24

**Approximate Acreage:** 12.62

**Mitigation Credit Potential:** Moderate

**Project Description:** This project is located in an upland area infested with dense stands of Brazilian pepper and melaleuca. In addition to the removal of exotic and nuisance vegetation, this project includes the construction of a large freshwater pond with an island. This pond will receive the stormwater from a culvert extending beneath the road before discharging it through a control structure into the adjacent mangrove swamp. Littoral zones of emergent vegetation may be created to enhance the diversity of habitats and increase nutrient uptake prior to discharge into the waters of Tampa Bay. A concrete spillway will serve as an overflow structure allowing the runoff to enter the mangrove forest during periods of heavy rain. A control structure may be added to adjust the pond's water level and provide a mechanism for pond maintenance.

**Project Objectives:** Hydrologic restoration, habitat enhancement and creation, and exotic/nuisance species control

**Construction Method:** Heavy machinery will be used to clear the site and excavate the pond. Excavated material will be used to fill the ditches and excess will be removed by truck for conveyance to its final destination. This destination is to be determined at a later date. Silt fencing and floating turbidity barriers will be installed where appropriate to prevent offsite sedimentation and maintain water quality standards within adjacent waters. Native vegetation will be planted and will include aquatic, emergent and transitional species. Species with some salt tolerance will be chosen where available to improve their survivability during extreme tidal events that may enter the pond. There will be approximately 91,164 cubic feet (3,376 cubic yards) of fill removed from this site. Please see Appendix D, Figure D.14 for the proposed pond and spillway details.

**Anticipated Obstacles:** A portion of the Project Site is within a former landfill, one of the Solid Waste Management Units (SWMU), and all work will require coordination with appropriate base personnel.

**Approximate Construction Costs:** \$315,000

**Project Maintenance and Monitoring:** Maintenance and monitoring will play a crucial role in the success of the project and will probably be a requirement of any permit issued by the pertinent agencies. All monitoring should be sophisticated enough to produce statistically valid data that in turn can be used to evaluate the success of the project. Maintenance needs will be identified during monitoring events and will be an ongoing effort. Maintenance activities may include additional nuisance and exotic species control, supplemental plantings, and minor earthwork. In addition, the pond and all associated control structures and conveyances should

be monitored regularly to ensure they are functioning as designed. Demucking may be required as sediments deposit from the adjacent upland drainage basin.

**Wetland Impacts:** There will be temporary impacts to the drainage ditches as they are converted to open water features.

## **7.7.27 MacDill AFB Ecosystem Restoration Conceptual Masterplan Future Project Site Data Sheet**

**Project Site #:** Future Project Sites

**Project Description and Goals:** These areas were generally excluded from the Masterplan, but should be considered for future restoration. Many small drainage ditches were cut through these sites. These should be removed in the same manner as in the rest of the project. Habitats that can be constructed include hardwood hammocks, high marsh, pine flatwoods, and freshwater ponds. The areas along Southshore Avenue may be good areas to plan high marsh habitats that can transition to mangrove forest as sea level rises over the next few decades.

**Construction Method:** N/A

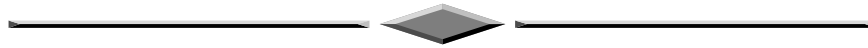
**Anticipated Obstacles:** Most of these areas are within the Solid Waste Management Units. Any restoration work within these areas should be coordinated with those managers.

**Approximate Construction Costs:** N/A

**Project Maintenance:** N/A

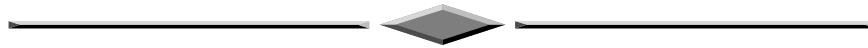
**Wetland Impacts:** N/A





## **APPENDIX E**

### **WETLAND PERMITTING PACKAGES FOR SITES 8 AND 15**







# Southwest Florida Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899

(352) 796-7211 or 1-800-423-1476 (FL only)

SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)

On the Internet at: [WaterMatters.org](http://WaterMatters.org)

An Equal  
Opportunity  
Employer

**Bartow Service Office**  
170 Century Boulevard  
Bartow, Florida 33830-7700  
(863) 534-1448 or  
1-800-492-7862 (FL only)

**Sarasota Service Office**  
6750 Fruitville Road  
Sarasota, Florida 34240-9711  
(941) 377-3722 or  
1-800-320-3503 (FL only)

**Tampa Service Office**  
7601 Highway 301 North  
Tampa, Florida 33637-6759  
(813) 985-7481 or  
1-800-836-0797 (FL only)

November 08, 2012

MacDill Air Force Base  
Attn: Lenny J. Richoux, Colonel, USAF  
8208 Hangar Loop Drive, Suite 1  
MacDill AFB, FL 33621

Subject: **Notice of Final Agency Action for Approval  
ERP Individual Construction**

Project Name: MacDill AFB Mangrove Restoration Project Sites 8 and 15  
App ID/Permit No: 667383 / 43014123.089  
County: HILLSBOROUGH  
Sec/Twp/Rge: S33/T30S/R18E, S28/T30S/R18E

Dear Permittee(s):

This letter constitutes notice of Final Agency Action for **approval** of the permit referenced above. Final approval is contingent upon no objection to the District's action being received by the District within the time frames described in the enclosed Notice of Rights.

Approved construction plans are part of the permit, and construction must be in accordance with these plans. These drawings are available for viewing or downloading through the District's Application and Permit Search Tools located at [www.WaterMatters.org/permits](http://www.WaterMatters.org/permits).

The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing notice of agency action will close the window for filing a petition for hearing. Legal requirements and instructions for publishing notice of agency action, as well as a noticing form that can be used is available from the District's website at [www.WaterMatters.org/permits/noticing](http://www.WaterMatters.org/permits/noticing).

If you publish notice of agency action, a copy of the affidavit of publishing provided by the newspaper should be sent to the Regulation Division at the District Service Office that services this permit.



If you have questions, please contact Jack Moore, at the Tampa Service Office, extension 2041. For assistance with environmental concerns, please contact Chaz Collins, extension 2092.

Sincerely,

Michelle K. Hopkins, P.E.  
Bureau Chief  
Environmental Resource Permit Bureau  
Regulation Division

Enclosures:    Approved Permit w/Conditions Attached  
                    [Statement of Completion](#)  
                    Notice of Authorization to Commence Construction  
                    Notice of Rights  
cc:                Joy Ryan  
                    U. S. Army Corps of Engineers  
                    Tampa Bay Regional Planning Council  
                    Charlene Stroehlen, P.E., AMEC Environmental & Infrastructure, Inc.

**SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT  
ENVIRONMENTAL RESOURCE  
INDIVIDUAL CONSTRUCTION  
PERMIT NO. 43014123.089**

**EXPIRATION DATE:**

**November 08, 2017**

**PERMIT ISSUE DATE: November 08, 2012**

This permit is issued under the provisions of Chapter 373, Florida Statutes, (F.S.), and the Rules contained in Chapters 40D-4 and 40D-40, Florida Administrative Code, (F.A.C.). The permit authorizes the Permittee to proceed with the construction of a surface water management system in accordance with the information outlined herein and shown by the application, approved drawings, plans, specifications, and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District). Unless otherwise stated by permit specific condition, permit issuance constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341. All construction, operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Administrative Code and the conditions of this permit.

**PROJECT NAME:** MacDill AFB Mangrove Restoration Project Sites 8 and 15

**GRANTED TO:** MacDill Air Force Base  
Attn: Lenny J. Richoux, Colonel, USAF  
8208 Hangar Loop Drive, Suite 1  
MacDill AFB, FL 33621

**OTHER PERMITTEES:** N/A

**ABSTRACT:** This permit will authorize the restoration of 10.68-acres of mangrove swamp, historically altered by a series of mosquito ditches. The proposed activities include the removal and lowering of the existing spoil piles and filling portions of the adjacent mosquito ditches. These activities will restore the area to original, historic elevations and promote the development of a native wetland system to replace the exotic/nuisance species communities that have become established.

**OP. & MAIN. ENTITY:** 6th Civil Engineer Squadron, USAF

**OTHER OP. & MAIN. ENTITY:** N/A

**COUNTY:** HILLSBOROUGH

**SEC/TWP/RGE:** S33/T30S/R18E, S28/T30S/R18E

**TOTAL ACRES OWNED**

**OR UNDER CONTROL:** 5627.00

**PROJECT SIZE:** 11.05 Acres

**LAND USE:** Government

**DATE APPLICATION FILED:** June 25, 2012

**AMENDED DATE:** N/A

## I. Water Quantity/Quality

Water quantity attenuation and water quality treatment are not required.

A mixing zone is not required.

A variance is not required.

## II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type	Encroachment Result* (feet)
0.00	0.00	No Encroachment	N/A

\*Depth of change in flood stage (level) over existing receiving water stage resulting from floodplain encroachment caused by a project that claims Minimal Impact type of compensation.

## III. Environmental Considerations

### Wetland/Other Surface Water Information

Wetland/Other Surface Water Name	Total Acres	Not Impacted Acres	Permanent Impacts		Temporary Impacts	
			Acres	Functional Loss*	Acres	Functional Loss*
MF1	9.83	0.00	0.00	0.00	9.83	0.00
TC	0.10	0.00	0.00	0.00	0.10	0.00
<b>Total:</b>	<b>9.93</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>9.93</b>	<b>0.00</b>

\* For impacts that do not require mitigation, their functional loss is not included.

### Wetland/Other Surface Water Comments:

This permit is for the restoration of 10.68-acres section of a mangrove swamp historically altered by a series of mosquito ditches along the southern boundary of MacDill Air Force Base. The 9.83-acres of temporary wetland impacts are a result of the restoration activities; therefore, does not have a Uniform Mitigation Assessment Method (UMAM) functional loss associated with it. A temporary culvert will be installed resulting in a 0.10-acre temporary surface water impact. Re-vegetation of the temporarily impacted wetland areas associated with the culvert is to occur via natural recruitment.

### Mitigation Information

Name	Creation		Enhancement		Preservation		Restoration		Enhancement +Preservation		Other	
	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain
SM1	0.85	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MF1	0.00	0.00	9.83	1.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total:</b>	<b>0.85</b>	<b>0.45</b>	<b>9.83</b>	<b>1.31</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

### Mitigation Comments:

The restoration of Sites 8 & 15 will include the restoration of 9.83-acres of historically impacted mangrove swamp and the 0.85-acre wetland creation from the upland spoil mounds. The mangrove swamp restoration will include natural recruitment of the three mangrove species, Rhizophora mangle, Avicennia germinans, and Laguncularia racemosa. The restoration site has been reviewed utilizing the Uniform Mitigation Assessment Method (UMAM) and has 1.76-units of functional gain. These 1.76-units of functional gain will be available for future development associated with MacDill Air Force Base.

## Specific Conditions

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit shall terminate, pursuant to Rule 40D-1.6105, F.A.C. In such situations, each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.
2. Unless specified otherwise herein, two copies of all information and reports required by this permit shall be submitted to the Regulation Department at the District Service Office that services this permit. The permit number, title of report or information and event (for recurring report or information submittal) shall be identified on all information and reports submitted.
3. The Permittee shall retain the design engineer, or other professional engineer registered in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The Permittee shall inform the District in writing of the name, address and phone number of the professional engineer so employed. This information shall be submitted prior to construction.
4. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit to the Regulation Department at the District Service Office that services this permit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C., and signed, dated, and sealed as-built drawings. The as-built drawings shall identify any deviations from the approved construction drawings.
5. The District reserves the right, upon prior notice to the Permittee, to conduct on-site research to assess the pollutant removal efficiency of the surface water management system. The Permittee may be required to cooperate in this regard by allowing on-site access by District representatives, by allowing the installation and operation of testing and monitoring equipment, and by allowing other assistance measures as needed on site.

6. **WETLAND MITIGATION SUCCESS CRITERIA MITIGATION AREA (Restoration Sites 8 & 15)(10.68-acres)**

Mitigation is expected to offset adverse impacts to wetlands and other surface waters caused by regulated activities and to achieve viable, sustainable ecological and hydrological wetland functions. Wetlands constructed for mitigation purposes will be considered successful and will be released from monitoring and reporting requirements when the following criteria are met continuously for a period of at least one year without intervention in the form of irrigation or the addition or removal of vegetation.

a. The mitigation area can reasonably be expected to develop into a Mangrove Swamp (FLUCCS 612) as determined by the Florida Land Use and Cover and Forms Classification System (third edition; January 1999).

b. Topography, water depth and water level fluctuation in the mitigation area are characteristic of the wetlands/surface water type specified in criterion "a."

c. Planted or recruited tree species that are greater than or equal to 12 feet in height and established for more than five (5) years shall meet the criteria specified:

**Zone:** A (MHWL- 2.5')

**Density (#/Acre):** 435

**Species:** *Rhizophora mangle*, *Avicennia germinans*, *Languncularia racemosa*

d. Species composition of recruiting wetland vegetation is indicative of the wetland type specified in criterion "a."

e. Coverage by nuisance or exotic species does not exceed five percent (5%) at any area within the mitigation site and five percent (5%) for the entire mitigation site.

f. The wetland mitigation area can be determined to be a wetland or other surface water according to Chapter 62-340, F.A.C.

The mitigation area may be released from monitoring and reporting requirements and be deemed successful at any time during the monitoring period if the Permittee demonstrates that the conditions in the mitigation area have adequately replaced the wetland and surface water functions affected by the regulated activity and that the site conditions are sustainable.

7. The Permittee shall monitor and maintain the wetland mitigation area(s) until the criteria set forth in the Wetland Mitigation Success Criteria Conditions(s) above are met. The Permittee shall perform corrective actions identified by the District if the District identifies a wetland mitigation deficiency.
8. The Permittee shall undertake required maintenance activities within the wetland mitigation area(s) as needed at any time between mitigation area construction and termination of monitoring, with the exception of the final year. Maintenance shall include the manual removal of all nuisance and exotic species, with sufficient frequency that their combined coverage at no time exceeds the Wetland Mitigation Success Criteria Condition (s) above. Herbicides shall not be used without the prior written approval of the District.
9. A Wetland Mitigation Completion Report shall be submitted to the District within 30 days of completing construction and planting of the wetland mitigation area(s). Upon District inspection and approval of the mitigation area(s), the monitoring program shall be initiated with the date of the District field inspection being the construction completion date of the mitigation area(s). Monitoring events shall occur between March 1 and November 30 of each year. An Annual Wetland Monitoring Report shall be submitted upon the anniversary date of District approval to initiate monitoring.

Annual reports shall provide documentation that a sufficient number of maintenance inspection /activities were conducted to maintain the mitigation area(s) in compliance according to the Wetland Mitigation Success Criteria Condition(s) above. Note that the performance of maintenance inspections and maintenance activities will normally need to be conducted more frequently than the collection of other monitoring data to maintain the mitigation area(s) in compliance with the Wetland Mitigation Success Criteria Condition(s) above.

Monitoring Data shall be collected *annually*.

10. Termination of monitoring for the wetland mitigation area(s) shall be coordinated with the District by:
  - a. notifying the District in writing when the criteria set forth in the Wetland Mitigation Success Criteria Condition(s) have been achieved;
  - b. submitting documentation, including the date, that all maintenance activities in the wetland mitigation area(s) have been suspended including, but not limited to, irrigation and addition or removal of vegetation; and,
  - c. submitting a monitoring report to the District one year following the written notification and suspension of maintenance activities.

Upon receipt of the monitoring report, the District will evaluate the wetland mitigation site(s) to determine if the Mitigation Success Criteria Condition(s) have been met and maintained. The District will notify the Permittee in writing of the evaluation results. The Permittee shall perform corrective actions for any portions of the wetland mitigation area(s) that fail to maintain the criteria set forth in the Wetland Mitigation Success Criteria Condition(s).

11. Following the District's determination that the wetland mitigation has been successfully completed, the Permittee shall operate and maintain the wetland mitigation area(s) such that they remain in their current or intended condition for the life of the surface water management facility. The Permittee must perform corrective actions for any portions of the wetland mitigation area(s) where conditions no longer meet the criteria set forth in the Wetland Mitigation Success Criteria Condition(s).
12. The Permittee shall commence construction of the mitigation area(s) within 30 days of wetland impacts, if wetland impacts occur between February 1 and August 31. If wetland impacts occur between September 1 and January 31, construction of the mitigation area(s) shall commence by March 1. In either case, construction of the mitigation area(s) shall be completed within 120 days of the commencement date unless a time extension is approved in writing by the District.
13. The construction of all wetland impacts and wetland mitigation shall be supervised by a qualified environmental scientist/specialist/consultant. The Permittee shall identify, in writing, the environmental professional retained for construction oversight prior to initial clearing and grading activities.
14. Wetland buffers shall remain in an undisturbed condition except for approved drainage facility construction/maintenance.
15. The following boundaries, as shown on the approved construction drawings, shall be clearly delineated on the site prior to initial clearing or grading activities:
  - wetland and surface water areas
  - wetland buffers
  - limits of approved wetland impacts
  - construction access for Wetland Restoration Sites 8 & 15The delineation shall endure throughout the construction period and be readily discernible to construction and District personnel.
16. All Wetland boundaries shown on the approved construction drawings shall be binding upon the Permittee and the District.
17. The District, upon prior notice to the Permittee, may conduct on-site inspections to assess the effectiveness of the erosion control barriers and other measures employed to prevent violations of state water quality standards and avoid downstream impacts. Such barriers or other measures should control discharges, erosion, and sediment transport during construction and thereafter. The District will also determine any potential environmental problems that may develop as a result of leaving or removing the barriers and other measures during construction or after construction of the project has been completed. The Permittee must provide any remedial measures that are needed.
18. This permit is issued based upon the design prepared by the Permittee's consultant. If at any time it is

determined by the District that the Conditions for Issuance of Permits in Rules 40D-4.301 and 40D-4.302, F.A.C., have not been met, upon written notice by the District, the Permittee shall obtain a permit modification and perform any construction necessary thereunder to correct any deficiencies in the system design or construction to meet District rule criteria. The Permittee is advised that the correction of deficiencies may require re-construction of the surface water management system.

19. The Permitted Plan Set for this project includes:  
the set received by the District on September 11, 2012.

**GENERAL CONDITIONS**

1. The general conditions attached hereto as Exhibit "A" are hereby incorporated into this permit by reference and the Permittee shall comply with them.

**Michelle K. Hopkins, P.E.**

---

Authorized Signature

## EXHIBIT A

### GENERAL CONDITIONS:

1. All activities shall be implemented as set forth in the plans, specifications and performance criteria as approved by this permit. Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit.
2. This permit or a copy thereof, complete with all conditions, attachments, exhibits, and modifications, shall be kept at the work site of the permitted activity. The complete permit shall be available for review at the work site upon request by District staff. The permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.
3. For general permits authorizing incidental site activities, the following limiting general conditions shall also apply:
  - a. If the decision to issue the associated individual permit is not final within 90 days of issuance of the incidental site activities permit, the site must be restored by the permittee within 90 days after notification by the District. Restoration must be completed by re-contouring the disturbed site to previous grades and slopes re-establishing and maintaining suitable vegetation and erosion control to provide stabilized hydraulic conditions. The period for completing restoration may be extended if requested by the permittee and determined by the District to be warranted due to adverse weather conditions or other good cause. In addition, the permittee shall institute stabilization measures for erosion and sediment control as soon as practicable, but in no case more than 7 days after notification by the District.
  - b. The incidental site activities are commenced at the permittee's own risk. The Governing Board will not consider the monetary costs associated with the incidental site activities or any potential restoration costs in making its decision to approve or deny the individual environmental resource permit application. Issuance of this permit shall not in any way be construed as commitment to issue the associated individual environmental resource permit.
4. Activities approved by this permit shall be conducted in a manner which does not cause violations of state water quality standards. The permittee shall implement best management practices for erosion and a pollution control to prevent violation of state water quality standards. Temporary erosion control shall be implemented prior to and during construction, and permanent control measures shall be completed within 7 days of any construction activity. Turbidity barriers shall be installed and maintained at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the permitted work. Turbidity barriers shall remain in place at all locations until construction is completed and soils are stabilized and vegetation has been established. Thereafter the permittee shall be responsible for the removal of the barriers. The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.
5. Water quality data for the water discharged from the permittee's property or into the surface waters of the state shall be submitted to the District as required by the permit. Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater by the American Public Health Association or Methods for Chemical Analyses of Water and Wastes by the U.S. Environmental Protection Agency. If water quality data are required, the permittee shall provide data as required on volumes of water discharged, including total volume discharged during the days of sampling and total monthly volume dis-charged from the property or into surface waters of the state.
6. District staff must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters, a written dewatering plan must either have been submitted and approved with the permit application or submitted to the District as a permit prior to the dewatering event as a permit modification. A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2, F.A.C.



7. Stabilization measures shall be initiated for erosion and sediment control on disturbed areas as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.
8. Off-site discharges during construction and development shall be made only through the facilities authorized by this permit. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the District.
9. The permittee shall complete construction of all aspects of the surface water management system, including wetland compensation (grading, mulching, planting), water quality treatment features, and discharge control facilities prior to beneficial occupancy or use of the development being served by this system.
10. The following shall be properly abandoned and/or removed in accordance with the applicable regulations:
  - a. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor.
  - b. Any existing septic tanks on site shall be abandoned at the beginning of construction.
  - c. Any existing fuel storage tanks and fuel pumps shall be removed at the beginning of construction.
11. All surface water management systems shall be operated to conserve water in order to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property and to minimize dewatering of offsite property .
12. At least 48 hours prior to commencement of activity authorized by this permit, the permittee shall submit to the District a written notification of commencement indicating the actual start date and the expected completion date.
13. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity.
14. Within 30 days after completion of construction of the permitted activity, the permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C. Additionally, if deviation from the approved drawings are discovered during the certification process the certification must be accompanied by a copy of the approved permit drawings with deviations noted.
15. This permit is valid only for the specific processes, operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application. Any substantial deviation from the approved drawings, exhibits, specifications or permit conditions, including construction within the total land area but outside the approved project area(s), may constitute grounds for revocation or enforcement action by the District, unless a modification has been applied for and approved. Examples of substantial deviations include excavation of ponds, ditches or sump areas deeper than shown on the approved plans.
16. The operation phase of this permit shall not become effective until the permittee has complied with the requirements of the conditions herein, the District determines the system to be in compliance with the permitted plans, and the entity approved by the District accepts responsibility for operation and maintenance of the system. The permit may not be transferred to the operation and maintenance entity approved by the

District until the operation phase of the permit becomes effective. Following inspection and approval of the permitted system by the District, the permittee shall request transfer of the permit to the responsible operation and maintenance entity approved by the District, if different from the permittee. Until a transfer is approved by the District, the permittee shall be liable for compliance with the terms of the permit.

17. Should any other regulatory agency require changes to the permitted system, the District shall be notified of the changes prior to implementation so that a determination can be made whether a permit modification is required.
18. This permit does not eliminate the necessity to obtain any required federal, state, local and special District authorizations including a determination of the proposed activities' compliance with the applicable comprehensive plan prior to the start of any activity approved by this permit.
19. This permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the permit and Chapter 40D-4 or Chapter 40D-40, F.A.C.
20. The permittee shall hold and save the District harmless from any and all damages, claims, or liabilities which may arise by reason of the activities authorized by the permit or any use of the permitted system.
21. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under section 373.421(2), F.S., provides otherwise.
22. The permittee shall notify the District in writing within 30 days of any sale, conveyance, or other transfer of ownership or control of the permitted system or the real property at which the permitted system is located. All transfers of ownership or transfers of a permit are subject to the requirements of Rule 40D-4.351, F.A.C. The permittee transferring the permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to such sale, conveyance or other transfer.
23. Upon reasonable notice to the permittee, District authorized staff with proper identification shall have permission to enter, inspect, sample and test the system to insure conformity with District rules, regulations and conditions of the permits.
24. If historical or archaeological artifacts are discovered at any time on the project site, the permittee shall immediately notify the District and the Florida Department of State, Division of Historical Resources.
25. The permittee shall immediately notify the District in writing of any previously submitted information that is later discovered to be inaccurate.

SOUTHWEST FLORIDA  
WATER MANAGEMENT DISTRICT

**NOTICE OF**

**AUTHORIZATION**

TO COMMENCE CONSTRUCTION

MacDill AFB Mangrove Restoration Project Sites 8 and 15

PROJECT NAME

Government

PROJECT TYPE

HILLSBOROUGH

COUNTY

S33/T30S/R18E, S28/T30S/R18E

SEC(S)/TWP(S)/RGE(S)

MacDill Air Force Base

PERMITTEE

APPLICATION ID/PERMIT NO: 667383 / 43014123.089

DATE ISSUED: November 08, 2012



Michelle K. Hopkins, P.E.

Issuing Authority

THIS NOTICE SHOULD BE CONSPICUOUSLY  
DISPLAYED AT THE SITE OF THE WORK

## **Notice of Rights**

### **ADMINISTRATIVE HEARING**

1. You or any person whose substantial interests are or may be affected by the District's action may request an administrative hearing on that action by filing a written petition in accordance with Sections 120.569 and 120.57, Florida Statutes (F.S.), Uniform Rules of Procedure Chapter 28-106, Florida Administrative Code (F.A.C.) and District Rule 40D-1.1010, F.A.C. Unless otherwise provided by law, a petition for administrative hearing must be filed with (received by) the District within 21 days of receipt of written notice of agency action. "Written notice" means either actual written notice, or newspaper publication of notice, that the District has taken or intends to take agency action. "Receipt of written notice" is deemed to be the fifth day after the date on which actual notice is deposited in the United States mail, if notice is mailed to you, or the date that actual notice is issued, if sent to you by electronic mail or delivered to you, or the date that notice is published in a newspaper, for those persons to whom the District does not provide actual notice.
2. Pursuant to Subsection 373.427(2)(c), F.S., for notices of agency action on a consolidated application for an environmental resource permit and use of sovereignty submerged lands concurrently reviewed by the District, a petition for administrative hearing must be filed with (received by) the District within 14 days of receipt of written notice.
3. Pursuant to Rule 62-532.430, F.A.C., for notices of intent to deny a well construction permit, a petition for administrative hearing must be filed with (received by) the District within 30 days of receipt of written notice of intent to deny.
4. Any person who receives written notice of an agency decision and who fails to file a written request for a hearing within 21 days of receipt or other period as required by law waives the right to request a hearing on such matters.
5. Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding District action is not available prior to the filing of a petition for hearing.
6. A request or petition for administrative hearing must comply with the requirements set forth in Chapter 28.106, F.A.C. A request or petition for a hearing must: (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's action or proposed action, (2) state all material facts disputed by the person requesting the hearing or state that there are no material facts in dispute, and (3) otherwise comply with Rules 28-106.201 and 28-106.301, F.A.C. Chapter 28-106, F.A.C. can be viewed at [www.flrules.org](http://www.flrules.org) or at the District's website at [www.WaterMatters.org/permits/rules](http://www.WaterMatters.org/permits/rules).
7. A petition for administrative hearing is deemed filed upon receipt of the complete petition by the District Agency Clerk at the District's Tampa Service Office during normal business hours, which are 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding District holidays. Filings with the District Agency Clerk may be made by mail, hand-delivery or facsimile transfer (fax). The District does not accept petitions for administrative hearing by electronic mail. Mailed filings must be addressed to, and hand-delivered filings must be delivered to, the Agency Clerk, Southwest Florida Water Management District, 7601 US Hwy. 301, Tampa, FL 33637-6759. Faxed filings must be transmitted to the District Agency Clerk at (813) 987-6746. Any petition not received during normal business hours shall be filed as of 8:00 a.m. on the next business day. The District's acceptance of faxed petitions for filing is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation, available for viewing at [www.WaterMatters.org/about](http://www.WaterMatters.org/about).

## **JUDICIAL REVIEW**

1. Pursuant to Sections 120.60(3) and 120.68, F.S., a party who is adversely affected by final District action may seek judicial review of the District's final action. Judicial review shall be sought in the Fifth District Court of Appeal or in the appellate district where a party resides or as otherwise provided by law.
2. All proceedings shall be instituted by filing an original notice of appeal with the District Agency clerk within 30 days after the rendition of the order being appealed, and a copy of the notice of appeal, accompanied by any filing fees prescribed by law, with the clerk of the court, in accordance with Rules 9.110 and 9.190 of the Florida Rules of Appellate Procedure (Fla. R. App. P.). Pursuant to Fla. R. App. P. 9.020(h), an order is rendered when a signed written order is filed with the clerk of the lower tribunal.

Charlene Stroehlen, P.E.  
AMEC Environmental & Infrastructure, Inc.  
404 Southwest 140th Terrace  
Newberry, FL 32669

Joy Ryan  
c/o AMEC Environmental & Infrastructure, Inc.  
404 Southwest 140th Terrace  
Newberry, FL 32669

MacDill Air Force Base  
Attn: Lenny J. Richoux, Colonel, USAF  
8208 Hangar Loop Drive, Suite 1  
MacDill AFB, FL 33621



Tampa Bay Regional Planning Council  
4000 Gateway Centre Blvd.  
Suite 100  
Pinellas Park, FL 33782

U. S. Army Corps of Engineers  
Tampa Permitting Section  
The Atrium - 10117 Princess Palm Avenue; Suite 120  
Tampa, FL 33610





#### COMMISSION

Kevin Beckner  
Victor D. Crist  
Ken Hagan  
Al Higginbotham

Lesley "Les" Miller, Jr.  
Sandra L. Murman  
Mark Sharpe

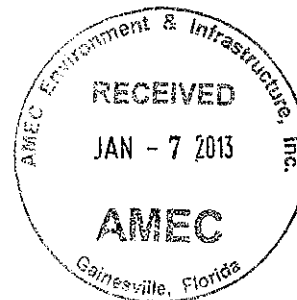
EXECUTIVE DIRECTOR  
Richard D. Garrity, Ph.D.

#### DIVISION DIRECTORS

Legal & Admin. Richard Tschantz, Esq.  
Air Management Jerry Campbell, P.E.  
Waste Management Hooshang Boostani, P.E.  
Water Management Sam Elrabi, P.E.  
Wetlands Management Scott Emery, Ph.D.

26 December 2012

Ms. Joy Ryan  
AMEC Environmental & Infrastructure, Inc.  
404 SW 140th Terrace  
Newberry, Florida 32669



**SUBJECT: 2<sup>ND</sup> REVISION TO THE WETLAND IMPACT AND MITIGATION  
AUTHORIZATION FOR MAC DILL AIR FORCE BASE MANGROVE  
RESTORATION PROJECT ADDITIONAL RESTORATION SITES 8 & 15 / 2<sup>ND</sup>  
REVISED PLAN AND REVISED UMAM WORKSHEETS PLANS DATED  
RECEIVED 29 NOVEMBER 2012/ STR 33-30-18**

Dear Ms. Ryan:

The Wetlands Management Division staff of the Environmental Protection Commission of Hillsborough County (EPC) has completed a review of the subject application revision to impact wetlands in Hillsborough County. The mangrove restoration project consists of wetland impacts for the grading and partial filling of a mosquito ditch and the removal of the associated spoil berm. The applicant demonstrated sufficient justification for the impacts and compensation for the wetland impact has been provided. This revision is to authorize additional mitigation credit for removal of additional upland spoil mounds west of the original restoration area and to authorize the connection of the north south ditch to the east end of the mangrove restoration area. This connection is needed to provide improved tidal flushing for the restoration area. This letter shall serve as documentation that the EPC Executive Director authorizes the wetland impacts and additional mitigation credit subject to the conditions and comments enumerated below:

1. Only those wetland impacts identified below are authorized for impact.

Wetland Impact ID#	Type system	Acreage of impact
1	Forested	2.18

Mitigation area #	acres	Type Mitigation
1	2.18	enhancement/forested
2	0.55	Creation / forested
SITES 8 & 9	10.68	Creation/ enhancement /forested
Total	13.41	

*An agency with values of environmental stewardship, integrity, honesty and a culture of fairness and cooperation*

Roger P. Stewart Center  
3629 Queen Palm Drive, Tampa, FL 33619 • (813) 627-2600 • [www.epchc.org](http://www.epchc.org)

*An Affirmative Action/Equal Opportunity Employer*



2. Mitigation offered to compensate for impacts to the wetlands consists of 12.01 acres of wetland enhancement and 1.40 acres of wetland creation. The approved planting plan and detail specifications are provided in the "Revised MacDill Air Force Base Mangrove Restoration Area plan and additional sites 8 & 15 dated received by the EPC 29 November 2012.
3. Utilizing the Uniform Mitigation Assessment Method outlined in Chapter 62-345, F.A.C., it was determined that the proposed impacts for this project will result in the loss of 0.364 functional units, while the proposed mitigation area will result in the gain of 2.55 functional units. **There is an excess of 2.186 functional gain units that will be available as mitigation for future MacDill AFB projects.**
4. The wetland mitigation area must be planted and monitored in accordance with the January 2010 mitigation plan and the 29 November 2012 plan.

**General Comments/ Conditions:**

- This approval is valid for a period of two and one half years from the date of this letter **(expiration date 26 June 2015)**. If the site plans are altered this approval will become invalid.
- This approval applies only to the development proposal as submitted, and in no way does it provide EPC approval to any other aspect of the EPC review process. In addition, this approval does not imply exemption from obtaining all proper permits from other governmental agencies.
- Any activity interfering with the integrity of wetland(s), such as clearing, excavating, draining or filling, without written authorization from the Executive Director of the EPC or his authorized agent, pursuant to Section 1-11.07, Rules of the Commission, would be a violation of Section 17 of the Environmental Protection Act of Hillsborough County, Chapter 84-446, and of Chapter 1-11, Rules of the EPC.

Be advised, the applicant is encouraged to publish, at their own expense, notice of this binding letter in the legal advertisements section of a newspaper of general circulation. Publication will extinguish third party rights to challenge the determination 20 days after the date of publication, unless a party specifically asked for a copy of the notice prior to issuance of the agency action. Choosing not to publish notice of this determination will allow third party challenges to remain open. If you choose to publish the proposed agency action, it should be published in substantially the following format:

**Environmental Protection Commission  
Notice of Proposed Agency Action**

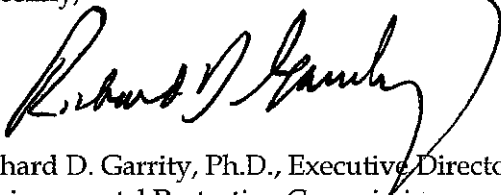
The EPC gives notice of its intent to approve a wetland impacts and mitigation in reference to ["Revised Mac Dill Air Force Base Mangrove Restoration Area plan and additional sites 8 & 15 dated

Ms. Joy Ryan  
26 December 2012  
Page 3

received by the EPC 29 November 2012]. Complete copies of the wetland impact and mitigation plans are available for public inspection, by appointment, during normal business hours 9:00a.m. to 5:00p.m., Monday through Friday at the EPC Wetlands and Watershed Management Division office, 3629 Queen Palm Drive, Tampa, FL 33619. Any person whose interests protected by Chapter 84-446, Laws of Florida, are adversely affected by this action has the right to appeal this wetland delineation. Written Notice of Appeal must be received by the Chairperson of the EPC, at 601 East Kennedy Blvd., Tampa, Florida 33602, within **twenty (20) days** of receipt of this notice and must state specifically what part of the action or decision is appealed and must specifically set forth the reasons for your objection. A copy of the Notice of Appeal must also be sent to the EPC's Legal Department, Environmental Protection Commission of Hillsborough County, 3629 Queen Palm Drive, Tampa, Florida 33619, facsimile (813) 627-2602.

Thank you for your cooperation. If you require additional information, please contact Mr. Tom LaFountain at (813) 627-2600, extension 1220.

Sincerely,

A handwritten signature in black ink, appearing to read "Richard D. Garrity", enclosed within a large, loopy, handwritten oval.

Richard D. Garrity, Ph.D., Executive Director  
Environmental Protection Commission  
of Hillsborough County

cc: Tom LaFountain, EPC  
Jason Kirkpatrick, Chugach Management Services

tflf/mst/ss

### NOTICE OF RIGHTS

Pursuant to Section 9 of the Hillsborough County Environmental Protection Act, Chapter 84-446, as amended, Laws of Florida, (EPC Act) and Rule 1-2.30, Rules of the Environmental Protection Commission of Hillsborough County (EPC), any person whose interests are protected by Chapter 84-446, Laws of Florida and who is adversely affected or otherwise aggrieved by this action has the right to appeal this action. **Written Notice of Appeal for a Section 9 Administrative Hearing must be received by the Chairperson of the EPC, at 601 East Kennedy Blvd., Tampa, Florida 33602, within twenty (20) days of receipt of this notice and pursuant to Section 1-2.30(c), Rules of the EPC, must include the following information:**

- (1) The name, address, and telephone number of the Appellant; the name, address, and telephone number of the Appellant's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the Appellant will be aggrieved or how his or her interests will be adversely affected by the Executive Director's decision;
- (2) A statement of when and how the Appellant received notice of the agency decision;
- (3) A statement of all disputed issues of material fact. If there are none, the Notice of Appeal must so indicate;
- (4) The specific facts the Appellant contends warrant reversal or modification of the Executive Director's proposed action;
- (5) A statement of the specific laws or rules the Appellant contends require reversal or modification of the Executive Director's proposed action; and
- (6) A statement of the relief sought by the Appellant, stating precisely the action Appellant wishes the Commission to take with respect to the Executive Director's proposed action or decision.

A copy of the Notice of Appeal for a Section 9 Administrative Hearing must also be sent to the EPC's Legal Department, Environmental Protection Commission of Hillsborough County, 3629 Queen Palm Dr., Tampa, Florida 33619, facsimile (813) 627-2602, phone (813) 627-2600. Pursuant to Section 1-2.31, Rules of the EPC, you may request additional time to file a Notice of Appeal by filing a **Request for Extension of Time to file a Notice of Appeal**. The Request for Extension of Time must be sent to and received by the EPC Legal Department at the address above within twenty (20) days of receipt of this notice.

**This Wetland Impact and Mitigation Authorization is final unless the party timely files, pursuant to Chapter 1-2, Part IV, Rules of the EPC, a Notice of Appeal or files a Request for Extension of Time to file a Notice of Appeal for a formal hearing.** Pursuant to Section 1-2.31(e), Rules of the EPC, failure to request an administrative hearing by filing a Notice of Appeal within 20 days after receipt of this order shall constitute a waiver of one's right to have

an appeal heard, and this unappealed order shall automatically become a final and enforceable order of the Commission.

Upon receipt of a sufficient Notice of Appeal for a Section 9 Administrative Hearing an independent hearing officer will be assigned. The hearing officer will schedule the appeal hearing at the earliest reasonable date. Following an evidentiary hearing, the hearing officer will render his/her decision as a recommendation before the EPC board. Pursuant to Section 1-2.35, Rules of the EPC, the EPC board will take final agency action on the findings of fact and conclusions of law of the hearing officer. A written decision will be provided by the EPC board, which affirms, reverses or modifies the hearing officer's decision. Should this final administrative decision still not be in your favor, you may seek review in accordance with Section 9 of the Hillsborough County Environmental Protection Act, Chapter 84-446, as amended, Laws of Florida, and the Administrative Procedure Act, Chapter 120, part II, Florida Statutes, 1961 by filing an appeal under rule 9.110 of the Florida Rules of Appellate Procedure, with the clerk of the Environmental Protection Commission, EPC Legal Department, 3629 Queen Palm Dr., Tampa, FL 33619, and filing a notice of appeal accompanied by the applicable filing fee with the Second District Court of Appeal within 30 days from the date of the final administrative decision becoming an order of the Commission.

Copies of EPC rules referenced in this Wetland Impact and Mitigation Authorization may be examined at any EPC office, may be found on the internet site for the agency at <http://www.epchc.org> or may be obtained by written request to the EPC Legal Department at 3629 Queen Palm Dr., Tampa, FL 33619.







DEPARTMENT OF THE ARMY  
JACKSONVILLE DISTRICT CORPS OF ENGINEERS  
10117 PRINCESS PALM AVE, SUITE 120  
TAMPA, FLORIDA 33610-8302

December 28, 2012

REPLY TO  
ATTENTION OF

Tampa Regulatory Office  
SAJ-2012-00805 (NW-CSH)

Lenny J. Richoux  
MacDill Air Force Base  
8208 Hangar Loop Drive, Suite 1  
MacDill, Florida 33621

Dear Mr. Richoux:

Your application for a Department of the Army permit received on March 21, 2012, has been assigned number SAJ-2012-00805 (NW-CSH). A review of the information and drawings provided shows the proposed work is to disperse upland spoil piles to restore historic topography and recruitment of associated wetland vegetation to the project area. Dispersion of the spoil mounds will be accomplished by hydroblasting the top of the spoil mounds approximately 360 degrees to create a more uniform elevation throughout the project area. Revegetation of desirable species will occur naturally through secondary succession. This project will restore tidal flushing through the mangrove swamp. Under the proposed action, the exotic species should be eliminated by the restored elevations and hydrologic regime. In addition to the dispersion of spoil piles, a 48 inch temporary culvert will be installed on the east side of the project area to convey additional water to the project site. The area of temporary wetland impacts in the proposed culvert area is 0.10 acres. Compensation for temporary impacts associated with the proposed action includes the creation of wetlands; lowering the topography of the upland spoil mounds, which will create wetlands (0.85 ac) in place of uplands. An enhancement of the existing mangrove forest (11.85 ac) will be accomplished once the spoil mounds are removed (hydroblasted), allowing a more natural tidal flow in the existing mangroves. The project area (identified as MacDill AFB Mangrove Restoration Project Sites 8 and 15) is located at the Southern end of MacDill Air Force Base near Southshore Road, in Section 33, Township 30 South, Range 18 East, Pinellas County, Florida, in water contiguous to Tampa Bay, Latitude 27.834630° North, Longitude -82.509738° West.

Your project, as depicted on the enclosed drawings, is authorized by Nationwide Permit (NWP) Number 27. In addition, project specific conditions have been enclosed. This verification is valid until **December 28, 2014**. It is incumbent upon you to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are issued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant nationwide permit is modified or revoked, you will have 12 months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this nationwide permit. Please access the U.S. Army Corps of Engineers' (Corps) Jacksonville District's Regulatory webpage to access web links to view the Final Nationwide Permits, Federal Register Vol. 77, dated February 21, 2012, the Corrections to the Final

Nationwide Permits, Federal Register 77, March 19, 2012, and the List of Regional Conditions. The website address is as follows:

<http://www.saj.usace.army.mil/Missions/Regulatory/SourceBook.aspx>

Please be aware this web address is case sensitive and should be entered as it appears above. Once there you will need to click on "Nationwide Permits." These files contain the description of the Nationwide Permit authorization, the Nationwide Permit general conditions, and the regional conditions, which apply specifically to this verification for NWP 27. Enclosed is a list of the six General Conditions, which apply to all Department of the Army authorizations. You must comply with all of the special and general conditions and any project specific condition of this authorization or you may be subject to enforcement action. In the event you have not completed construction of your project within the specified time limit, a separate application or re-verification may be required.

The following special conditions are included with this verification:

1. **Reporting Address:** The Permittee shall submit all reports, documentation and correspondence required by the conditions of this permit to the following address: U.S. Army Corps of Engineers, Regulatory Division, Enforcement Section, 10117 Princess Palm Ave, Suite 120, Tampa, Florida 33610-8302. The Permittee shall reference this permit number, SAJ-2012-00805 (NW-CSH) on all submittals.
2. **Commencement Notification:** Within 10 days from the date of initiating the authorized work, the Permittee shall provide to the Corps a written notification of the date of commencement of work authorized by this permit.
3. **Self-Certification:** Within 60 days of completion of the authorized work or at the expiration of the construction authorization of this permit, whichever occurs first, the Permittee shall complete the attached "Self-Certification Statement of Compliance" form and submit to the Corps. In the event that the completed work deviates, in any manner, from the authorized work, the Permittee shall describe, on the Self-Certification Form, the deviations between the work authorized by the permit and the work as constructed. Please note that the description of any deviations on the Self-Certification Form does not constitute approval of any deviations by the Corps.
4. **Erosion Control:** Prior to the initiation of any work authorized by this permit, the Permittee shall install erosion control measures along the perimeter of all work areas to prevent the displacement of fill material outside the work area. Immediately after completion of the final grading of the land surface, all slopes, land surfaces, and filled areas shall be stabilized using sod, degradable mats, barriers, or a combination of similar stabilizing materials to prevent erosion. The erosion control measures shall remain in

place and be maintained until all authorized work has been completed and the site has been stabilized.

5. **Fill Material:** The Permittee shall use only clean fill material for this project. The fill material shall be free from items such as trash, debris, automotive parts, asphalt, construction materials, concrete block with exposed reinforcement bars, and soils contaminated with any toxic substance, in toxic amounts in accordance with Section 307 of the Clean Water Act.
6. **Regulatory Agency Changes:** Should any other regulatory agency require changes to the work authorized or obligated by this permit, the Permittee is advised that a modification to this permit instrument is required prior to initiation of those changes. It is the Permittee's responsibility to request a modification of this permit from the Tampa Regulatory Office.
7. **Assurance of Navigation and Maintenance:** The Permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structures or work herein authorized, or if in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the Permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.
8. **Cultural Resources/Historic Properties:** No structure or work shall adversely affect impact or disturb properties listed in the National Register of Historic Places (NRHP) or those eligible for inclusion in the NRHP.
  - a. If during the ground disturbing activities and construction work within the permit area, there are archaeological/cultural materials encountered which were not the subject of a previous cultural resources assessment survey (and which shall include, but not be limited to: pottery, modified shell, flora, fauna, human remains, ceramics, stone tools or metal implements, dugout canoes, evidence of structures or any other physical remains that could be associated with Native American cultures or early colonial or American settlement), the Permittee shall immediately stop all work in the vicinity and notify the Corps. The Corps shall then notify the Florida State Historic Preservation Officer (SHPO) and the appropriate Tribal Historic Preservation Officer(s) (THPO(s)) to assess the significance of the discovery and devise appropriate actions.

- b. A cultural resources assessment may be required of the permit area, if deemed necessary by the SHPO, THPO(s), or Corps, in accordance with 36 CFR 800 or 33 CFR 325, Appendix C (5). Based, on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend or revoke the permit in accordance with 33 CFR Part 325.7. Such activity shall not resume on non-federal lands without written authorization from the SHPO for finds under his or her jurisdiction, and from the Corps.
  - c. In the unlikely event that unmarked human remains are identified on non-federal lands, they will be treated in accordance with Section 872.05 Florida Statutes. All work in the vicinity shall immediately cease and the Permittee shall immediately notify the medical examiner, Corps, and State Archeologist. The Corps shall then notify the appropriate SHPO and THPO(s). Based, on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend or revoke the permit in accordance with 33 CFR Part 325.7. Such activity shall not resume without written authorization from the State Archeologist and from the Corps.
9. This letter of authorization does not obviate the necessity to obtain any other Federal, State, or local permits, which may be required. Prior to the initiation of any construction, projects qualifying for this Nationwide permit must qualify for an exemption under section 403.813(1), F.S. or 373.406, F.S., or otherwise be authorized by the applicable permit required under Part IV of Chapter 373, F.S., by the Department of Environmental Protection, a water management district under section 373.069, F.S., or a local government with delegated authority under section 373.441, F.S., and receive Water Quality Certification (WQC) and applicable Coastal Zone Consistency Concurrence (CZCC) or waiver thereto, as well as any authorizations required for the use of state-owned submerged lands under Chapter 253, F.S., and, as applicable, Chapter 258, F.S. You should check State-permitting requirements with the Florida Department of Environmental Protection or the appropriate water management district.

This letter of authorization does not include conditions that would prevent the 'take' of a state-listed fish or wildlife species. These species are protected under sec. 379.411, Florida Statutes, and listed under Rule 68A-27, Florida Administrative Code. With regard to fish and wildlife species designated as species of special concern or threatened by the State of Florida, you are responsible for coordinating directly with the Florida Fish and Wildlife Conservation Commission (FWC). You can visit the FWC license and permitting webpage (<http://www.myfwc.com/license/wildlife/>) for more information, including a list of those fish and wildlife species designated as species of special concern or threatened. The Florida Natural Areas Inventory (<http://www.fnai.org/>) also maintains updated lists, by county, of documented occurrences of those species.

This letter of authorization does not give absolute Federal authority to perform the work as specified on your application. The proposed work may be subject to local building restrictions mandated by the National Flood Insurance Program. You should contact your local office that issues building permits to determine if your site is located in a flood-prone area, and if you must comply with the local building requirements mandated by the National Flood Insurance Program.

If you are unable to access the internet or require a hardcopy of any of the conditions, limitations, or expiration date for the above referenced NWP, please contact Caitlin Hoch by telephone at 813-769-7073.

Thank you for your cooperation with our permit program. The Corps Jacksonville District Regulatory Division is committed to improving service to our customers. We strive to perform our duty in a friendly and timely manner while working to preserve our environment. We invite you to take a few minutes to visit <http://per2.nwp.usace.army.mil/survey.html> and complete our automated Customer Service Survey. Your input is appreciated – favorable or otherwise. Again, please be aware this web address is case sensitive and should be entered as it appears above.

Sincerely,

A handwritten signature in black ink, reading "Kevin D. O'Kane". The signature is fluid and cursive, with the first letters of each word being capitalized and prominent.

Kevin D. O'Kane  
Chief, Tampa Section

Enclosures

Copy/ies Furnished:

Robert B. Hyghes  
MacDill Air Force Base  
7621 Hillsborough Loop Drive  
MacDill, Florida 33621

bcc:  
CESAJ-RD-PE

GENERAL CONDITIONS  
33 CFR PART 320-330

PUBLISHED FEDERAL REGISTER DATED 13 NOVEMBER 1986

1. The time limit for completing the work authorized ends on **date identified in the letter**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow a representative from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.



**SELF-CERTIFICATION STATEMENT OF COMPLIANCE**

**Permit Number: NW-27**

**Application Number: SAJ-2012-00805 (NW-CSH)**

Permittee's Name & Address (please print or type): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Telephone Number: \_\_\_\_\_

Location of the Work: \_\_\_\_\_

\_\_\_\_\_  
Date Work Started: \_\_\_\_\_ Date Work Completed: \_\_\_\_\_

Description of the Work (e.g., bank stabilization, residential or commercial filling, docks, dredging, etc.): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Acreage or Square Feet of Impacts to Waters of the United States: \_\_\_\_\_

Describe Mitigation completed (if applicable): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Describe any Deviations from Permit (attach drawing(s) depicting the deviations): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

I certify that all work, and mitigation (if applicable) was done in accordance with the limitations and conditions as described in the permit. Any deviations as described above are depicted on the attached drawing(s).

\_\_\_\_\_  
Signature of Permittee

\_\_\_\_\_  
Date

**DEPARTMENT OF THE ARMY PERMIT TRANSFER REQUEST**

**PERMIT NUMBER: SAJ-2012-00805 (NW-CSH)**

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. Although the construction period for works authorized by Department of the Army permits is finite, the permit itself, with its limitations, does not expire.

To validate the transfer of this permit and the associated responsibilities associated with compliance with its terms and conditions, have the transferee sign and date below and mail to the U.S. Army Corps of Engineers, Enforcement Section, Post Office Box 4970, Jacksonville, FL 32232-0019.

\_\_\_\_\_  
**(TRANSFeree-SIGNATURE)**

\_\_\_\_\_  
**(SUBDIVISION)**

\_\_\_\_\_  
**(DATE)**

\_\_\_\_\_  
**(LOT)**

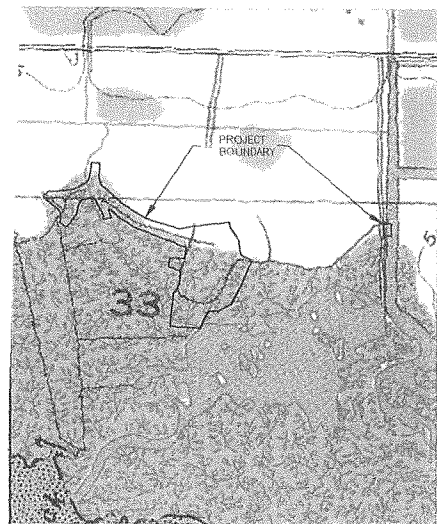
\_\_\_\_\_  
**(BLOCK)**

\_\_\_\_\_  
**(NAME-PRINTED)**

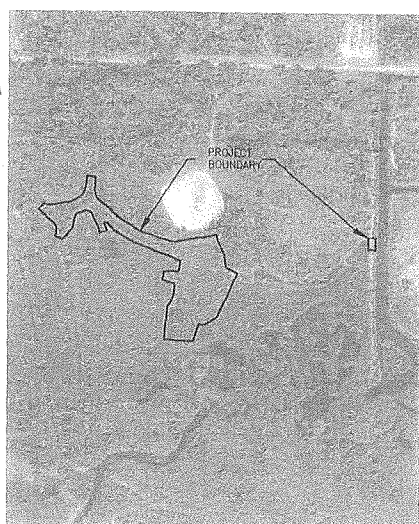
\_\_\_\_\_  
**(STREET ADDRESS)**

\_\_\_\_\_  
**(MAILING ADDRESS)**

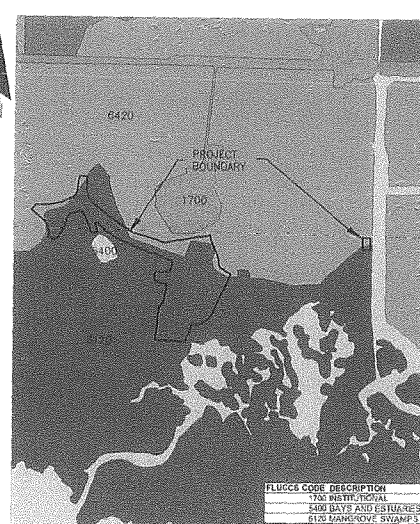
\_\_\_\_\_  
**(CITY, STATE, ZIP CODE)**



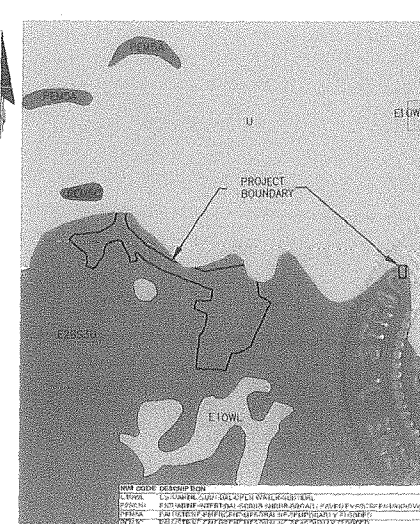
**USGS QUAD MAP**  
SOURCE: USGS 7.5' QUAD 1997  
QUAD #3121 PORT TAMPA



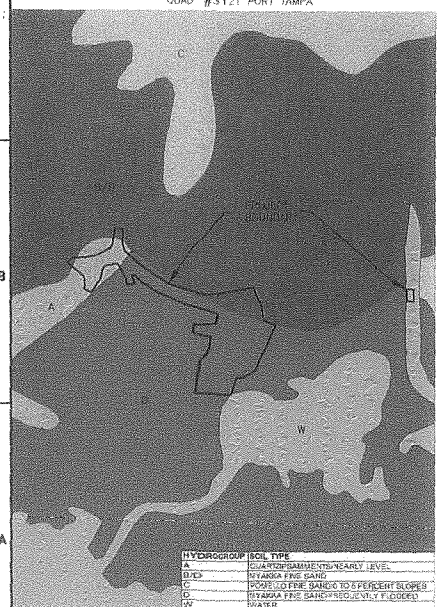
**AERIAL VIEW**  
SOURCE: LABINS, 2010



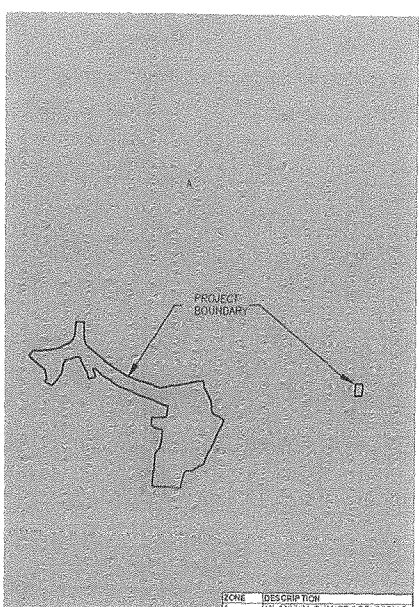
**FLUCCS MAP**  
SOURCE: SFWMD, 2009



**WETLANDS MAP**  
SOURCE: NATIONAL WETLANDS INVENTORY, 2000



**SOILS MAP**  
SOURCE: NRCS, 2000



**FLOOD MAP**  
SOURCE: FEMA, 2000  
PANEL ID #12057C0459H

**amec**

404 SW 10TH AVENUE  
SUITE 200  
FORT LAUDERDALE, FL 33304  
TEL: 954.572.3100

*A. Hacht*  
06/20/12  
#58714

DATE: 06/20/12  
SIGNATURE: [Signature]  
DATE: 06/20/12

**ECOSYSTEM  
RESTORATION SITE  
NO. 8 & NO. 15**

**MACDILL AIR  
FORCE BASE**

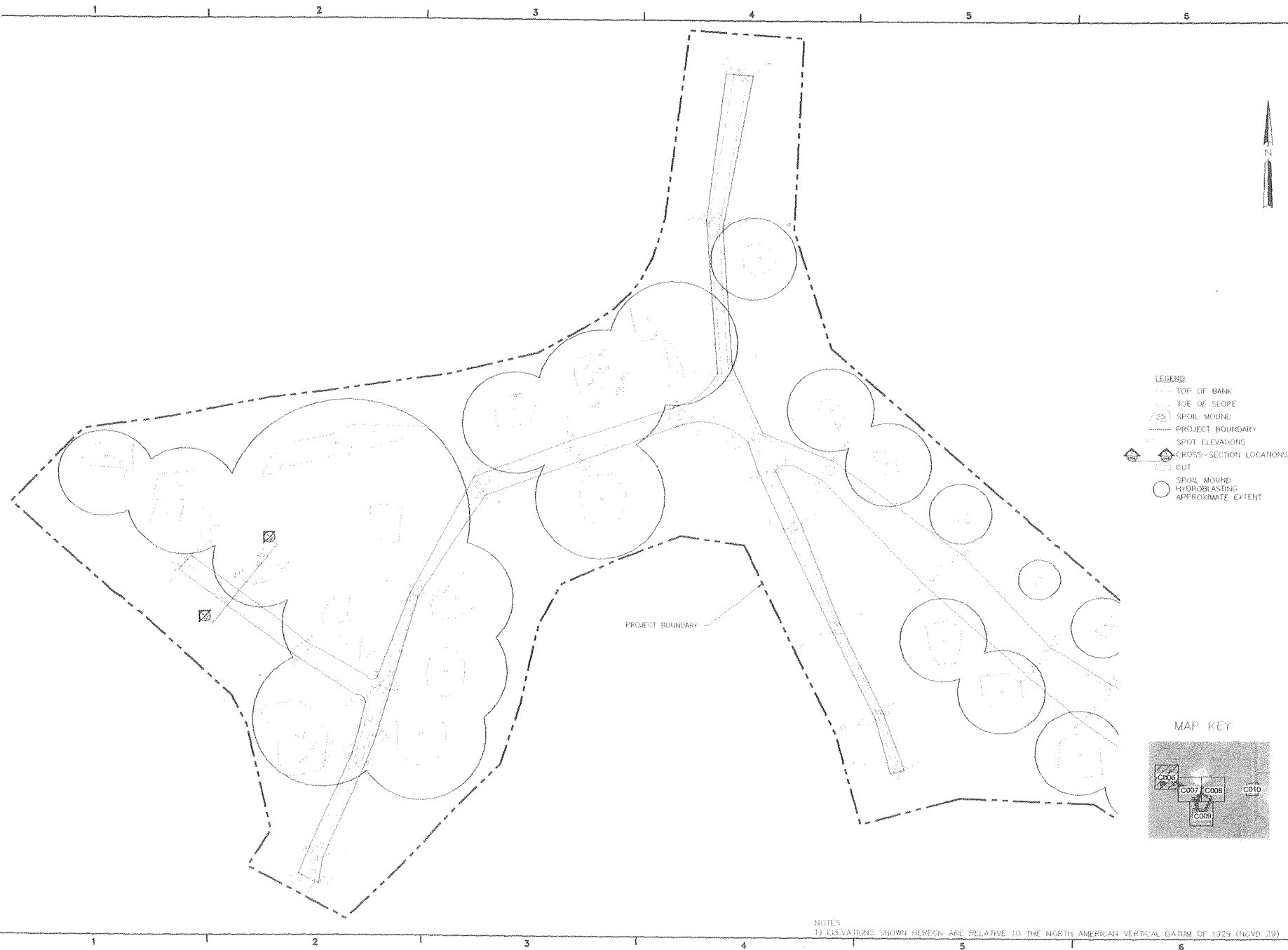
AMC PROJECT # 12057C0459H  
12057C0459H

REV	DATE	BY	REVISION

DESIGNED BY	AMC
DRAWN BY	AMC
CHECKED BY	AMC
APPROVED BY	AMC
DATE	06/15/2012

**LOCATION MAPS**

PROJECT NUMBER	REV. #
C002	
SHEET #	TOTAL #
25	25



**amec**  
 400 W. 10th Street  
 Helena, MT 59601  
 TEL: (406) 261-1111

0 25 50  
 SCALE: 1"=25'

*CAH*  
 06/20/12  
 #58774

001 0400 06/20/12  
 001 0400 06/20/12

**ECOSYSTEM  
 RESTORATION SITE  
 NO. 8 & NO. 15**

**MACDILL AIR  
 FORCE BASE**

AMEC PROJECT NO.  
 001 0400 06/20/12

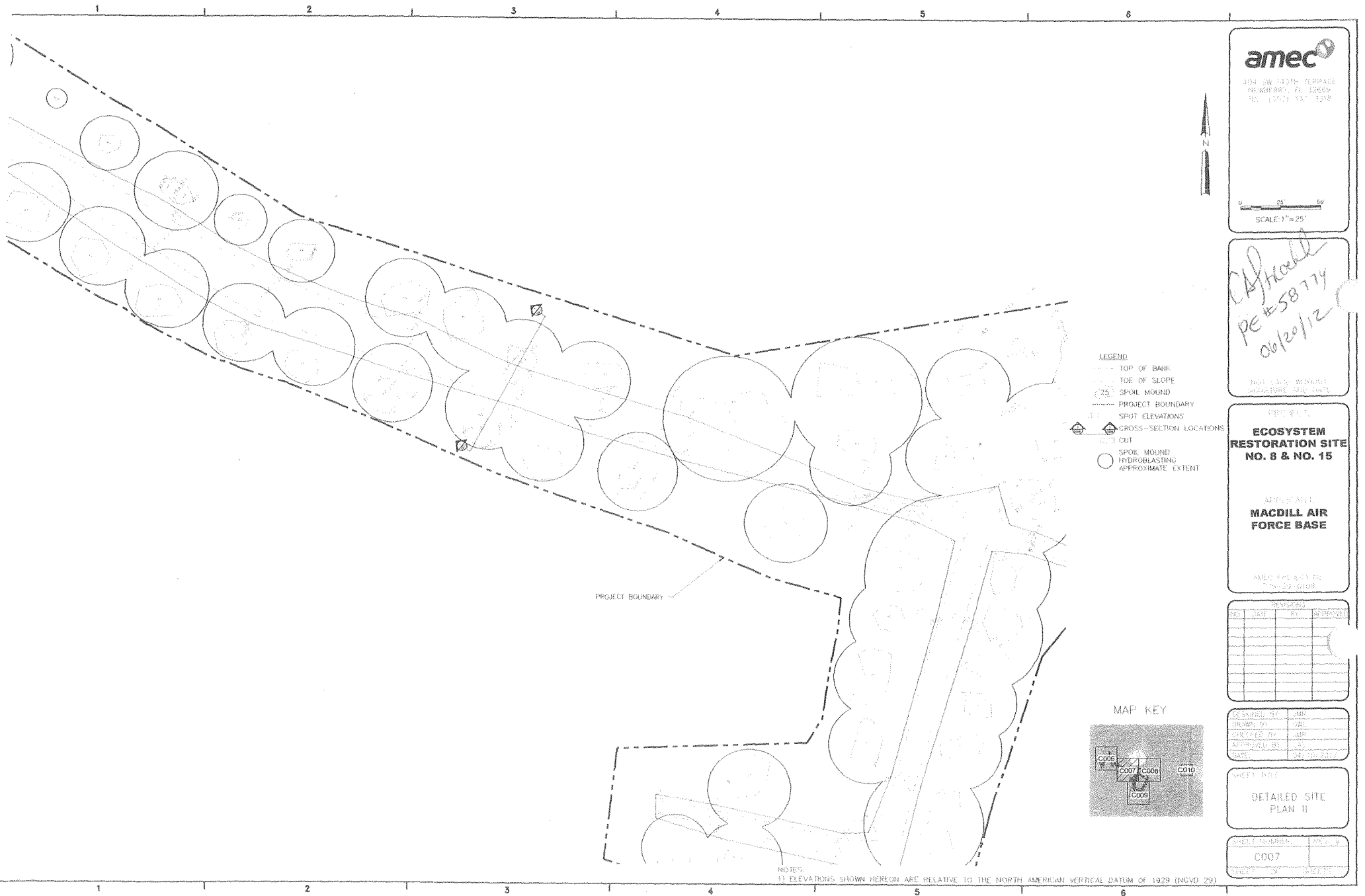
DATE	BY	REVISION

DESIGNED BY	MM
DRAWN BY	MM
CHECKED BY	MM
APPROVED BY	MM
DATE	04/20/12

**DETAILED SITE  
 PLAN I**

PROJECT NUMBER	C006
SHEET NO.	1

NOTES  
 1) ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1929 (NGVD 29)



**amec**

404 SW 130TH TERRACE  
DEERBURY, FL 32009  
TEL: (904) 432-1338

SCALE: 1"=25'

*Capitol*  
*PE #58774*  
*06/20/12*

NOT TO SCALE  
PROPOSED SLOPE

**ECOSYSTEM  
RESTORATION SITE  
NO. 8 & NO. 15**

**APPLICANT  
MACDILL AIR  
FORCE BASE**

AMEC PROJECT NO.  
7-12-07-0089

REV	DATE	BY	APPROVED

DESIGNED BY	AM
DRAWN BY	AM
CHECKED BY	AM
APPROVED BY	AM
DATE	04/20/12

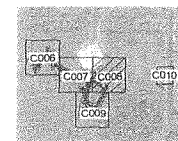
**DETAILED SITE  
PLAN II**

SHEET NUMBER	NO. 8
C007	
SHEET 30	SHEET 31



- LEGEND**
- TOP OF BANK
  - .-.- TOE OF SLOPE
  - SPOIL MOUND
  - PROJECT BOUNDARY
  - SPOT ELEVATIONS
  - △ CROSS-SECTION LOCATIONS
  - CUT
  - SPOIL MOUND HYDROBLASTING APPROXIMATE EXTENT

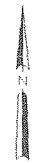
MAP KEY



NOTES  
1) ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1929 (NGVD 29).

**amec**

434 SW 140TH TERRACE  
MILWAUKEE, FL 32669  
TEL: (352) 634-4718



0 25 50  
SCALE 1"=25'

*GH Hall*  
*PC #58774*  
*06/20/12*

DATE: 06/20/12  
SIGNATURE: GH Hall

**PROJECT**  
**ECOSYSTEM RESTORATION SITE NO. 8 & NO. 15**

**APPROVAL**  
**MACDILL AIR FORCE BASE**

DATE: 06/20/12

REV.	DATE	BY	APPROVED

DESIGNED BY	MAP
DRAWN BY	SW
CHECKED BY	SW
APPROVED BY	SW
DATE	06/20/12

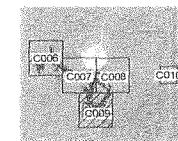
**SHEET 3 OF 3**  
**DETAILED SITE PLAN III**

SHEET NUMBER	REV. #
C008	
SHEET 3 OF 3	



- LEGEND**
- TOP OF BANK
  - TOE OF SLOPE
  - SPOIL MOUND
  - PROJECT BOUNDARY
  - SPOT ELEVATIONS
  - CUT
  - SPOIL MOUND HYDROBLASTING APPROXIMATE EXTENT

**MAP KEY**



NOTES:  
1) ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1929 (NGVD 29).

**amec**

304 SW 140TH TERRACE  
FARMERSVILLE, TX 75844  
TEL: (352) 332-1144



0 25' 50'  
SCALE: 1"=25'

*CA approved*  
*06/20/12*  
*#58774*

NOT VALID WITHOUT  
SIGNED AND SEALED

**ECOSYSTEM  
RESTORATION SITE  
NO. 8 & NO. 15**

**MACDILL AIR  
FORCE BASE**

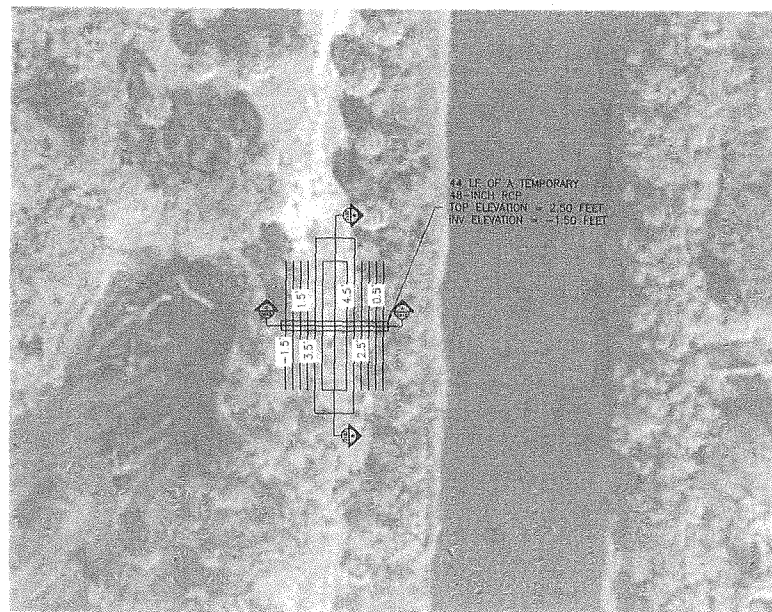
AMC PROJECT NO.  
2012-0108

REV	DATE	BY	APPROVAL

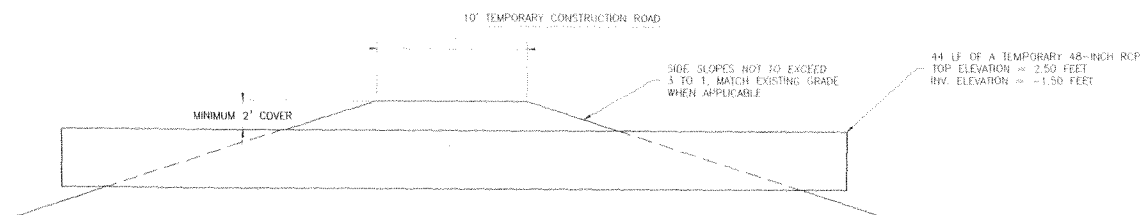
DESIGNED BY	ME
DRAWN BY	ME
CHECKED BY	ME
APPROVED BY	CAS
DATE	12/10/12

**DETAILED SITE  
PLAN IV**

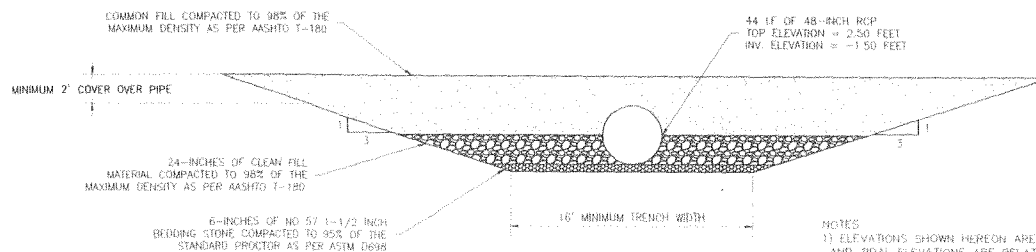
SHEET NUMBER	1 of 4
C009	
DATE	06/20/12



PLAN VIEW  
SCALE: 1"=25'



CROSS-SECTION A-A  
N.T.S.

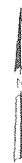


CROSS-SECTION B-B  
N.T.S.

LEGEND  
— PROPOSED GRADE

amec

104 SW 14TH STREET  
NEWPORT, FL 32605  
TEL: 232-570-1212



SCALE: 1"=25'

*Handwritten:*  
PE #55774  
06/20/12

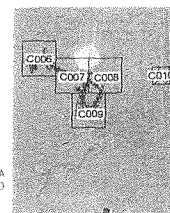
NOT VALID WITHOUT  
SIGNATURE AND DATE

ECOSYSTEM  
RESTORATION SITE  
NO. 8 & NO. 15

ARMED  
MACDILL AIR  
FORCE BASE

DATE: 06/20/12

MAP KEY



USGS 7.5-MINUTE QUAD  
MAP NAME = PORT TAMPA  
GAGE STATION ID # = 570  
MHWL = 1.47 FEET  
MLWL = -0.36 FEET

- NOTES
- 1) ELEVATIONS SHOWN HEREON ARE APPROXIMATE DUE TO THE SURVEY DATA NOT AVAILABLE. CULVERT ELEVATIONS AND TIDAL ELEVATIONS ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1929 (NGVD 29).
  - 2) TRENCH IS TO BE BACKFILLED WITH CLEAN GRANULAR MATERIAL IN 6" LAYERS (MAXIMUM LFTS), COMPACTED AS SHOWN.
  - 3) CONTRACTOR IS RESPONSIBLE FOR MEETING ALL SAFETY STANDARDS DURING CONSTRUCTION, CONSIDERING O.S.H.A. STANDARDS FOR TRENCH WIDTH, SOIL TYPE, ANGLE OF REPOSE, ETC TO PROPERLY PROTECT WORKERS.

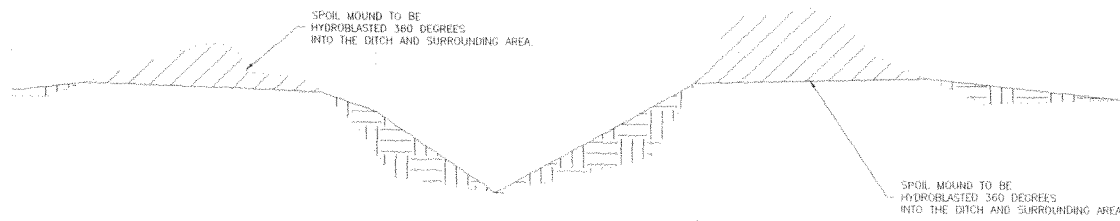
REV	DATE	BY	APPROVED

DESIGNED BY	JMP
DRAWN BY	SW
CHECKED BY	JMP
APPROVED BY	CA
DATE	06/10/2012

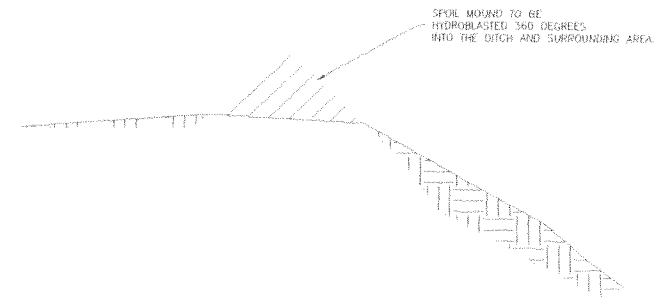
DETAILED SITE  
PLAN V

SHEET NUMBER	PEY #
C010	
SHEET OF	SHEET

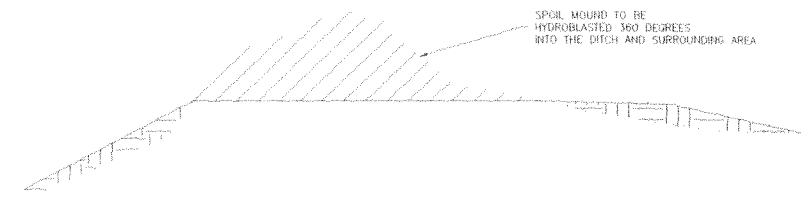




1 TYPICAL SPOIL MOUND HYDROBLAST CROSS-SECTION  
C007  
HOR: 1"=5' VER: 1"=1'



2 TYPICAL SPOIL MOUND HYDROBLAST CROSS-SECTION  
C006  
HOR: 1"=5' VER: 1"=1'



3 TYPICAL SPOIL MOUND HYDROBLAST CROSS-SECTION  
C008  
HOR: 1"=5' VER: 1"=1'

LEGEND:  
EXISTING GRADE LINE  
PROPOSED GRADE LINE  
CUT  
FILL

LEGEND:  
EXISTING GRADE LINE  
PROPOSED GRADE LINE  
CUT  
FILL

LEGEND:  
EXISTING GRADE LINE  
PROPOSED GRADE LINE  
CUT  
FILL



401 SW 14TH TERRACE  
NEWPORT, RI 02840  
TEL: (401) 552-1500

*CAHILL*  
PE #58774  
06/20/12  
NOT VALID WITHOUT  
SIGNATURE AND SEAL

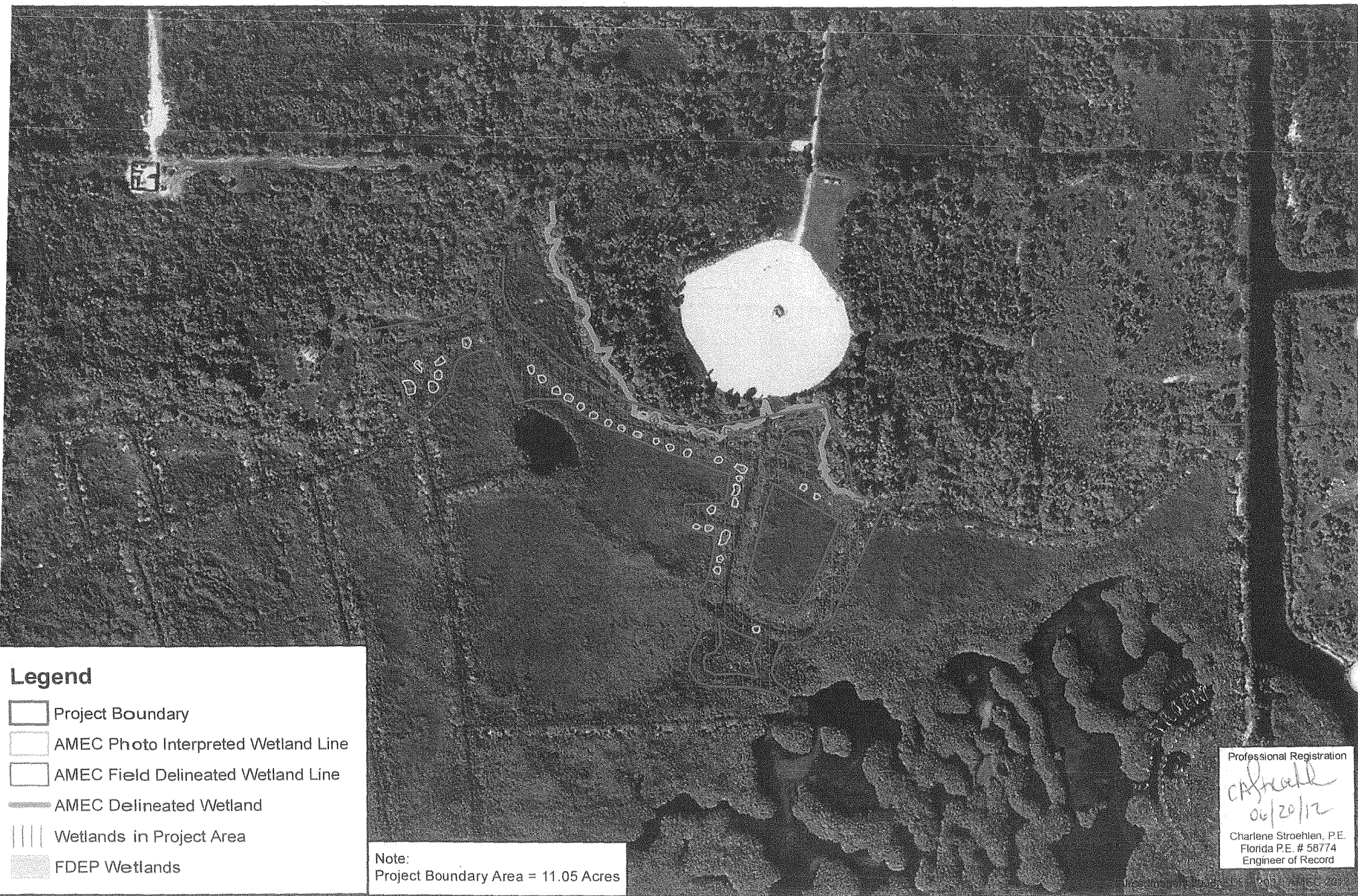
PROJECT  
**ECOSYSTEM  
RESTORATION SITE  
NO. 8 & NO. 15**  
  
AT THE  
**MACDILL AIR  
FORCE BASE**  
  
SHEET NO. 11  
OF 12 SHEETS

REV.	DATE	BY	APPROVED

DESIGNED BY	DR
DRAWN BY	DR
CHECKED BY	DR
APPROVED BY	DR
DATE	06/20/12

SHEET NO. 11  
TYPICAL  
CROSS-SECTIONS 1

SHEET NUMBER	REV. #
C011	
SHEET OF	SHEETS



**Legend**

- Project Boundary
- AMEC Photo Interpreted Wetland Line
- AMEC Field Delineated Wetland Line
- AMEC Delineated Wetland
- Wetlands in Project Area
- FDEP Wetlands

Note:  
Project Boundary Area = 11.05 Acres

Professional Registration  
*Charlene Stroehlen*  
06/20/12  
Charlene Stroehlen, P.E.  
Florida P.E. # 58774  
Engineer of Record

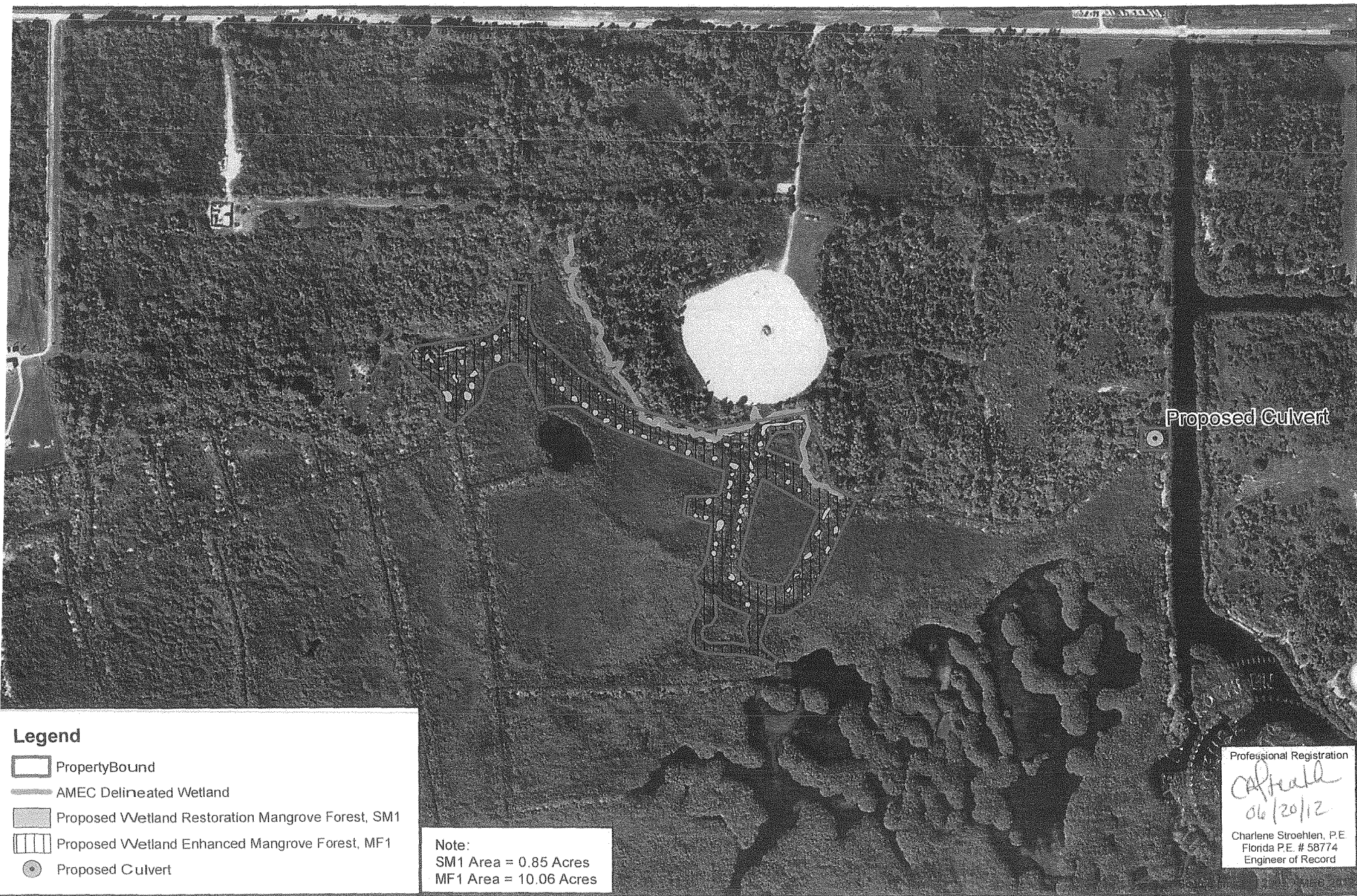
0 200 400 800 Feet

MacDill AFB, FL  
Existing Wetlands

Project 775290108  
Figure 1

Created/Date: DLA 04/26/2012  
Checked/Date: JMR 04/26/2012





0 200 400 800 Feet

**amec**

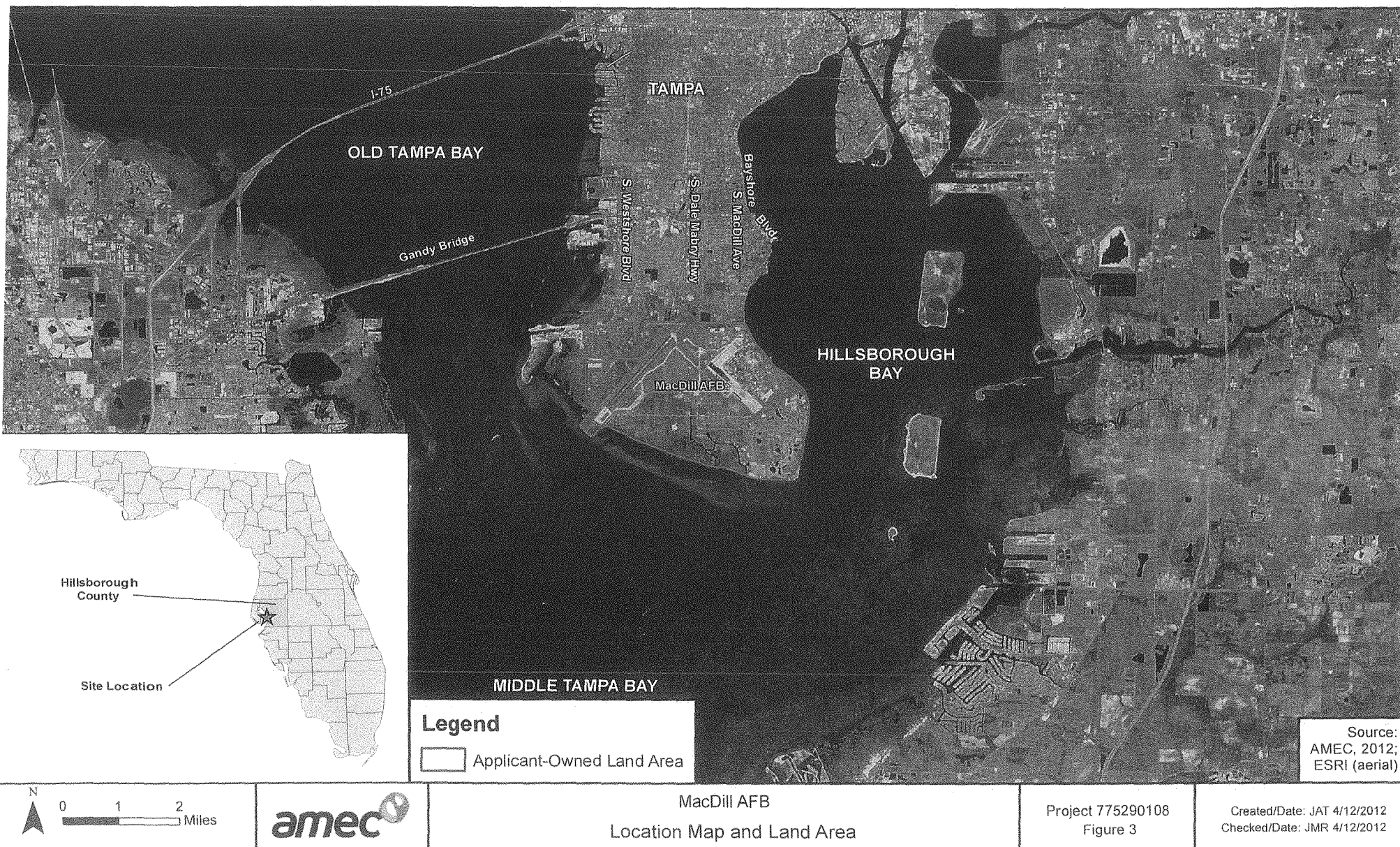
MacDill AFB, FL  
Proposed Wetlands

Project 775290108  
Figure 2

Created/Date: DLA 04/26/2012  
Checked/Date: JMR 04/26/2012

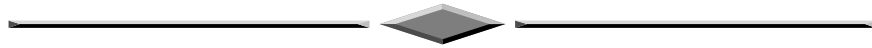
SAJ-2012-00805  
December 28, 2012





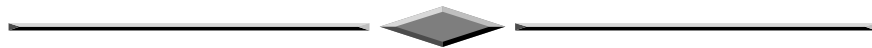
*Handwritten:*  
06/20/12  
#58774  
SAJ-2012-00805  
December 28, 2012





## **APPENDIX F**

### **STANDARD MANATEE CONDITIONS FOR IN-WATER WORK**





## STANDARD MANATEE CONDITIONS FOR IN-WATER WORK

2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

- a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.
- b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.
- c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.
- d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.
- e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or in Vero Beach (1-772-562-3909) for south Florida, and emailed to FWC at [ImperiledSpecies@myFWC.com](mailto:ImperiledSpecies@myFWC.com).
- f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8½" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at [http://www.myfwc.com/WILDLIFEHABITATS/manatee\\_sign\\_vendors.htm](http://www.myfwc.com/WILDLIFEHABITATS/manatee_sign_vendors.htm). Questions concerning these signs can be forwarded to the email address listed above.



# CAUTION: MANATEE HABITAT

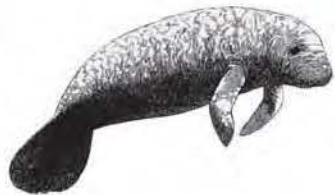
**All project vessels**

**IDLE SPEED / NO WAKE**

When a manatee is within 50 feet of work  
all in-water activities must

**SHUT DOWN**

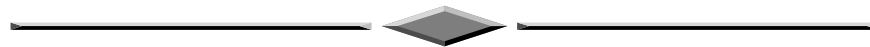
Report any collision with or injury to a manatee:



**Wildlife Alert:**

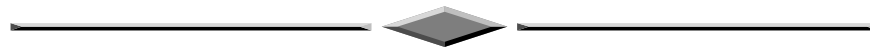
**1-888-404-FWCC(3922)**

cell \*FWC or #FWC



## **APPENDIX G**

### **CUMULATIVE PROJECT LISTS**





**APPENDIX G**  
**CUMULATIVE PROJECT LIST**

**Table G-1. Proposed Demolition Projects**

<b>Project Identification Number and Title</b>	<b>Installation Project Number</b>	<b>FY</b>	<b>Land Use</b>	<b>Description</b>	<b>Potential Constraints</b>	<b>Facilities Demolition (ft²)</b>	<b>Total Project Area (ft²)</b>	<b>Change in Impervious Surface (ft²)</b>
D1. Demolish Buildings 65, 82, 83, 85, and 1205	NVZR090025	2013	Industrial	Demolish Buildings 65 (Morale, Welfare, and Recreation Offices, 9,522 ft²), 82 (USAF Plant Administration Office, 3,898 ft²), 83 (WHSE Supply and Equipment BSE, 2,579 ft²), 85 (BE Storage Shed, 70 ft²), and 1205 (Wastewater Treatment Facility, 1,700 ft²). Terminate utilities and restore site to match surrounding areas.	ERP, Floodplain	17,769	13,332	-17,769
D2. Demolish Building 1107	NVZR100154	2013	Open Space	Demolish Building 1107 (Warehouse Supply and Equipment, 2,431 ft²). Terminate utilities and restore site to match adjacent areas.	ERP, Floodplain, ACM, LBP	2,431	29,284	-2,431
D3. Demolish Building 40	NVZR100179	2014	Administrative	Demolish Building 40 (Communications Facility, 11,737 ft²).	Floodplain, Historic District, ACM, LBP	11,737	45,614	-11,737
D4. Demolish Building 496	NVZR110159	2014	Administrative	Demolish Building 496 (Family Housing Management Office, 3,600 ft²) and construct a parking lot for Building 499 (Surf's Edge Club).	Floodplain	3,600	74,486	+24,807
<b>Total Square Feet</b>						<b>35,537</b>	<b>162,716</b>	<b>-7,130</b>

Note: Total Project Area includes additional laydown area required for demolition activities.

Key:

ACM = asbestos-containing material

ERP = Environmental Restoration Program

ft² = square feet

BCE = Base Civil Engineering

HQ = headquarters

LBP = lead-based paint

**Table G-2. Proposed Construction Projects**

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Total Project Area (ft²)	Change in Impervious Surface (ft²)
<b>Representative Construction Projects</b>							
C1. Upgrade Fitness Center Soccer Field, Add to and Alter Physical Fitness Center, Joint Combat Aquatic Training Center (JCAT)*	NVZR103707, NVZR063705, NVZR103706	2013, 2014	Outdoor Recreation	Construct a new 36,000-ft2 indoor JCAT Center in the area of the Base Fitness Center. Project includes demolition of Facilities 46 (Pool, 7,011 ft2) and 47 (Bathhouse, 3,795 ft2). Total project area needed for demolition is 54,961 ft2 because the site is elevated. Renovate south and southwest sections of existing facility (12,422 ft2); and pave and stripe the parking area south of the existing facility (includes a new pedestrian bridge and retention pond). Three parking areas totaling 122,874 ft2 would be constructed.	Floodplain, Wetlands	Facilities: 48,422 Pavements: 104,603 Demolition: 54,961 Total Project Area: 278,961	+ 142,219
C2. Construct Logistics Readiness Complex*	NVZR043704	2013	Administrative, Open Space	Construct a 32,132-ft2 Logistics Readiness Complex to replace inadequate facilities. Project relocates the transportation function and consolidates functions adjacent to the Supply Warehouse (Building 49). Demolishes 5 substandard facilities (Buildings 119, 175, 178, 500, and 510) totaling 41,059 ft2 and remove a leased modular facility. Total project area, including building footprints, paved areas, roadway work, storm water retention pond(s), and green spaces, is 309,274 ft2, with 252,646 ft2 of impervious surfaces. Straightening Marina Bay Drive entails a new 35,700 ft2-roadway to replace the existing 26,600 ft2-roadway (see Project I4). Parking areas would be constructed for vehicle maintenance, vehicle operations, and POVs.	ACM, LBP, Floodplain	Facilities: 79,191 Pavements: 261,746 Site Improvements: Total Project Area: 344,974	+293,878

**Table G-2. Proposed Construction Projects**

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Total Project Area (ft²)	Change in Impervious Surface (ft²)
C3. Construct EOD Bunker Barricades	NVZR110193	2013	Outdoor Recreation	Construct new explosive ordnance disposal (EOD) range 780-ft2 detonation point barricades and a 300-ft2, 3-sided reinforced-concrete personnel bunker.	ERP, QD, wetlands, floodplain	Facilities:1,080 Pavements: 0 Site Improvements:0 Total Project Area:	+1,080
C4. Construct Joint Special Operations University (JSOU)*	NVZR083702	2013	Administrative	Demolish two temporary structures (Buildings 506A and E, totaling 39,027 ft2) with a total demolition project area of 94,234 ft2; construct a three-story, 85,000-ft2 education building elevated above the floodplain to collocate the JSOU with SOCOM. Utilities would be upgraded. Two potential sites are available: overlying the site with Buildings 506A and 506E, or to the northwest of Building 510.	Floodplain	143,234	- 22,546
C5. Construct Outdoor Recreation Maintenance Facility*	NVZR103710	2014, 2015	Outdoor Recreation	Construct a 20,500-ft2 building behind Building 60. Facility would serve as the storage and maintenance building for outdoor recreation equipment. The 50,000 ft2-parking area would be reconfigured. The project also includes the demolition of Buildings 13, 60, and 694 (5,695 ft2).	Wetlands, Floodplain	Facilities: 20,500 Pavements: 50,000 Site Improvements: Demolition: 37,000 Total Project Area: 76,195	+64,805

**Table G-2. Proposed Construction Projects**

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Total Project Area (ft²)	Change in Impervious Surface (ft²)
C6. Alert Facility, Fuels Mobility Support Equipment Facility*	NVZR103712 NVZR063716 NVZR110053	2014, 2015	Open Space	Construct a 2-story, 30,000-ft² facility to house crew readiness operational, recreational, and administrative functions adjacent to the Alert Aircraft Parking Ramp. Construct an 18,000-ft² facility to house FMSE and FORCE, and a 3,050-ft² facility for administrative functions. A 10,000-ft² fuels containment area with three support fuel tanks would be included. Includes demolition of obsolete facilities (1051, 1052, 1053, 1069, 1079, and 1081) for a total demolition project area of 144,273 ft², and relocation of operational testing equipment. An 180,000 ft² parking area would be constructed.	ERP, Wetlands, Floodplain	Facilities: 61,050 Pavements: 180,000 Site Improvements: Total Project Area: 385,323	+208,534
C7. Construct Security Forces Boat Dock	NVZR070157	2016	Open Space	Construct a dedicated boat dock for SF water patrol craft. Install a refueling tank.	Sensitive species, Wetlands	Facilities: 10,000 Pavements: Site Improvements: Total Project Area: 10,000	+1,000
<b>Total Square Feet</b>						<b>1,879,923</b>	<b>+843,288</b>

Note: \* = Denotes projects that include demolition of facilities.

Key:

ACM = asbestos-containing material

BCE = Base Civil Engineering

ERP = Environmental Restoration Program

FMSE = Fuels Mobility Support Equipment

FORCE = Fuels Operation Readiness Capability Equipment

ft² = square feet

FY = Fiscal Year

JCAT = Joint Combat Aquatic Center

LBP = lead-based paint

SF = Security Forces

QD = quantity distance

Table G-3. Proposed Representative Infrastructure Improvement Projects							
Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Total Project Area (ft <sup>2</sup> )	Change in Impervious Surface (ft <sup>2</sup> )
I1. CENTCOM Parking Garage Site Preparation; Construct CENTCOM Parking Garage	NVZR083712A, NVZR083712	2012, 2013	Industrial	Site preparation (including soil compaction) and construction of a multi-story, 595,981-ft <sup>2</sup> parking garage to accommodate approximately 1,500 vehicles and 112 motorcycles. An elevated 5,580-ft <sup>2</sup> walkway above Zemke Boulevard would connect the garage to the replacement headquarters building currently under construction. Project includes demolition of Facilities 1051, 1052, and 1053 to clear the site and all necessary roadway modifications, landscaping, utilities, communications, site improvements, and construction of replacement facilities. Possible photovoltaic system.	SWMU 61, Floodplain	835,731	+612,272
I2. Straighten Marina Bay Drive*	NVZR100044	2013	Open Space	Fix problems of Marina Bay Drive near Building 49, Base Supply by straightening the road and adding sidewalks and landscaping.	Floodplain	36,000	+9,100
I3. Construct Dining Facility Parking Lot	NVZR110153	2013	Community Service	Construct parking lot where Building 258 (Education Center) currently stands. Demolition of Building 258 is not part of this project.	Floodplain	60,000	+48,000
I4. Construct Medical Clinic Sidewalks	NVZR100054	2013	Medical	Construct 3,150 linear feet of a 6-foot-wide concrete sidewalk.	Airfield	4,800	+18,900



Table G-3. Proposed Representative Infrastructure Improvement Projects							
Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Total Project Area (ft <sup>2</sup> )	Change in Impervious Surface (ft <sup>2</sup> )
I5. Replace Sludge Digester Tanks	NVZR100051	2013	Industrial	Replace two 170,000-gallon sludge digestion tanks. Tanks are original equipment installed in the 1950s and have developed several minor leaks. The tanks would be within the wastewater treatment plant compound north of the existing digesters (Facility 64).	Sensitive species, Floodplain	3,300	+3,300
I6. Construct DISA Parking Lot, Building 805	NVZR110059	2014	Open Space	Expand Building 805 parking lot to support increased personnel from 18 to 70 spaces.	Floodplain	18,000	+18,000
<b>Total Square Feet</b>						<b>1,163,431</b>	<b>+945,372</b>

Note: \* = Denotes projects that include demolition of facilities.

Key:

CENTCOM = U.S. Central Command

CS = Communications Squadron

DISA = Defense Information Systems Agency

ERP = Environmental Restoration Program

ft<sup>2</sup> = square feet

HQ = headquarters

SOCOM = Special Operations Command

SOF = Special Operations Forces

SWMU = Solid Waste Management Unit

**Table G-4. Proposed Representative Natural Infrastructure Management Projects**

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Total Project Area (ft <sup>2</sup> )	Change in Impervious Surface (ft <sup>2</sup> )
<b>Representative Natural Infrastructure Management Projects</b>							
NI1. Storm Water Drainage Improvement	NVZR080772, NVZR050269, NVZR100178, NVZR090053, NVZR040097, NVZR110027, NVZR090123, NVZR040198, NVZR090105, NVZR090097	2012 - 2016	Airfield, Housing, Industrial, Open Space	Remove excess sediment and vegetation and restore grades to storm water drainage ditches. Four ditches have sediment contaminated with VOCs, PAHs, and metals. Three of these ditches are adjacent or in near proximity to the airfield. Replace two storm water drainage pipes under Bayshore Boulevard near the pedestrian bridge across from the old military housing area (south of Youth Center). Dredge installation drainage ditches within the tank farm area. The north ditch is approximately 1,600 feet long; the south drainage is approximately 700 feet long. Repair/replace existing storm water drainage culverts at various locations (e.g., Marina Bay Drive, Southshore Avenue, North Golf Course Street, and Golf Course Avenue). Clean out the concrete culvert just north of the Waste Water Treatment Plant near Building 717. Clean, evaluate, and repair the joints of box culvert K-9 on the eastern end of Taxiway K to facilitate proper storm water drainage. Repair damaged reinforced concrete pipe and headwall (2,000 ft <sup>2</sup> ) near Bayshore Boulevard and CENTCOM Avenue. Repair headwall in the southern side of Taxiway G, west of the entry to Taxiway X (2,000 ft <sup>2</sup> ).	Airfield, ERP, Wetlands, Floodplain	184,156	No change

Table G-4. Proposed Representative Natural Infrastructure Management Projects							
Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Total Project Area (ft <sup>2</sup> )	Change in Impervious Surface (ft <sup>2</sup> )
NI2. Airfield Tree Violations, MacDill	NVZR060078	2016	Airfield/Open Space	Remove trees within 1,000 feet of the centerline of the runway.	Wetlands, Floodplain	372,618	No change
Total Square Feet						556,774	No change

Note: \* = Denotes projects that include demolition of facilities.

Key:

ERP = Environmental Restoration Program

ft<sup>2</sup> = square feet

PAH = polycyclic aromatic hydrocarbon

VOC = volatile organic compound

Table G-5. Representative Strategic Sustainability Performance Project							
Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Total Project Area (ft <sup>2</sup> )	Change in Impervious Surface (ft <sup>2</sup> )
Representative Strategic Sustainability Performance Project							
S1. Install Jogging Path Lighting	NVZR100079	2013	Open Space	Install solar-powered lights along Southshore Road from the intersection with North Golf Course Street (west) for a distance of 1.5 miles.	QD, Wetlands, Floodplain	7,920	No change
Total Square Feet						7,920	No change

Key:

ft<sup>2</sup> = square feet

QD = quantity-distance

**Table G-6. Other Projects (for Cumulative Impacts Analysis) - Demolition**

<b>Project Identification Number and Title</b>	<b>Installation Project Number</b>	<b>FY</b>	<b>Land Use</b>	<b>Description</b>	<b>Potential Constraints</b>	<b>Facilities Demolition (ft²)</b>	<b>Total Project Area (ft²)</b>	<b>Change in Impervious Surface (ft²)</b>
D5. Demolish Building 1132	NVZR100141	2012	Open Space	Demolish Building 1132 (AFCS Maintenance Facility).	Floodplain	345	1,533	-345
D6. Demolish Building 1135	NVZR100139	2012	Open Space	Demolish Building 1135 (Electric Power Station Building).	Floodplain	694	18,313	-694
D7. Demolish Buildings 540 and 543	NVZR053714B	2012	Administrative	Demolish Buildings 540 (CENTCOM HQ Major Command, 187,215ft²) and 543 (OPS, SP, 3,069 ft²). Construct a 190,000-ft² parking area (see Project I1, CENTCOM Parking Area).	ERP, Floodplain	190,284	392,255	+284
D8. Demolish Building 1144	NVZR100140	2012	Open Space	Demolish Building 1144 (Warehouse).	Floodplain	192	2,640	-192
D9. Demolish Building 595	NVZR100132	2012	Open Space	Demolish Building 595 (Utility Vault) near the MacDill Avenue gate, terminate utilities, and restore site to match surrounding areas. Building is obsolete, serves no useful purpose and has been vacated by 6 CS.	Floodplain	96	828	-1,700
D10. Demolish Building 826 and 827	NVZR110086	2012	Open Space	Demolish Building 826 and 827 (Calibration Docks).	Floodplain	6,112	7,356	0
D11. Demolish Building 821	NVZR100142	2013	Industrial	Demolish Building 821 (Communications Facility). Cable maintenance operations are to move into vacated Hangar 3 space upon completion of Building 6 Add to/ Alter BRAC project.	ERP, QD, Floodplain	4,121	16,000	-4,121

**Table G-6. Other Projects (for Cumulative Impacts Analysis) - Demolition**

<b>Project Identification Number and Title</b>	<b>Installation Project Number</b>	<b>FY</b>	<b>Land Use</b>	<b>Description</b>	<b>Potential Constraints</b>	<b>Facilities Demolition (ft²)</b>	<b>Total Project Area (ft²)</b>	<b>Change in Impervious Surface (ft²)</b>
D12. Demolish Buildings 1101 and 1161	XX	2013	Industrial	Demolish Buildings 1101 (WHSE Supply and Equipment BSE, 1,270 ft²) and 1161 (Communications Facility, 2,944 ft²). Terminate utilities and restore site to match adjacent areas.	Floodplain, ACM, LBP	17,093	29,284	-17,093

**Table G-7. Other Projects (for Cumulative Impacts Analysis) - Construction**

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Total Project Area (ft²)	Change in Impervious Surface (ft²)
C8. Construct Storage Facility	NVZR120028	2012		Construct a storage facility near Building 700. Demolish buildings 1075, 1083, and 1084. Storage facility would collocate functions from demolished buildings. Supports the Clinic/SOCCENT/Mission Support Facility Area Development Plan.			
C9. Construct Fitness Assessment Cell Running Track	NVZR100152	2012	Outdoor Recreation	Install artificial turf in the in field of the running track. Construct a 1/4-mile running track; relocate an existing softball field (total area of 380,000 ft²).	Floodplain, Wetlands	Facilities: Pavements: Site Improvements: Total Project Area: 380,000	
C10. Construct CE Storage Area, Building 293	NVZR110064	2013	Industrial	Construct a covered, secured area for storage of plumbing equipment and materials at Building 293.	Floodplain	400	No change
C11. Construct Dorm Area Recreational Courts	NVZR100028	2013	Medical	Construct outdoor basketball and volleyball courts to support “block party” functions near Dorm 253 and the future Dorm 370.	Floodplain	109,000	+21,800
C11. Construct Obstacle Course	NVZR100150	2013	Industrial	Construct a 12-station obstacle course and storage facility for safety equipment.	Floodplain, Wetlands	435,597	+57,600
C12. Construct Recreational Pavilion Dorm Area	NVZR100029	2013	Housing	Construct a recreational pavilion near Dorm 253 and the future Dorm 370. Facility will have restrooms and showers to support “block party” functions.	Floodplain	1,200	+1,200
C13. Construct AGE Canopies, Building 552	NVZR110031	2013	Industrial	Install a canopy over the AGE wash rack and along the west side of Building 552.	ERP, Floodplain	21,000	No Change
C14. Construct Medical Group Storage Facility	NVZR090104	2013	Industrial	Construct a 4,500-ft² War Reserve Materiel warehouse for the 6th Medical Group.	Floodplain	4,500	+4,500

**Table G-7. Other Projects (for Cumulative Impacts Analysis) - Construction**

<b>Project Identification Number and Title</b>	<b>Installation Project Number</b>	<b>FY</b>	<b>Land Use</b>	<b>Description</b>	<b>Potential Constraints</b>	<b>Total Project Area (ft²)</b>	<b>Change in Impervious Surface (ft²)</b>
C15. Construct SFS Training Pad	NVZR110175	2013	Industrial	Construct a fitness-training pad near the Bayshore Running Trail across from Building 499 (Surf's Edge Club).	ERP, Floodplain	3,000	+2,500
C16. Education Center Addition	NVZR093708	2013	Community	Construct one 4,000 ft²-addition to Building 252. The addition would be two stories and would provide seven classrooms to replace those lost when Building 258 is demolished (demolition of Building 258 is not part of this project). Wing to be added to the north side of the building. Close and demolish Snowy Egret Street and Condor Street adjacent to the education center, and restore to green space to comply with AT/FP requirements. Redesign/relocate existing ponds and drainage to support new construction. Additional parking to be added if necessary.	Floodplain	4,000	2,000
C17. Miscellaneous MSA Upgrades	NVZR100114	2013	Industrial	Miscellaneous upgrades to the MSA. Construct 776 linear feet of 12-foot-wide pavement within the MSA. Fill and level field between Buildings 843 and 845.	QD, Bald Eagle Nest, Floodplain	9,312	+9,312
C18. NOAA AOC	NVZR103701	2013	Open Space	Construct replacement facilities to relocate the NOAA AOC. Replacement facilities include general purpose maintenance hangar(s) with parts storage and shop areas; HAZMAT Storage, administrative space, AGE storage, Life Safety Equipment storage, and 40,500-ft² Aircraft Parking Apron. The proposed site is near Buildings 1195/1196 (old Hush Houses).	Airfield	161,051	+161,051



**Table G-7. Other Projects (for Cumulative Impacts Analysis) - Construction**

<b>Project Identification Number and Title</b>	<b>Installation Project Number</b>	<b>FY</b>	<b>Land Use</b>	<b>Description</b>	<b>Potential Constraints</b>	<b>Total Project Area (ft²)</b>	<b>Change in Impervious Surface (ft²)</b>
C19. Postal Service Center	NVZR083709	2013	Medical	Construct a 10,000-ft² facility to receive and inspect mail. A 40,000-ft² parking lot would be constructed.	None	50,000	+50,000
C20. Joint Operations and Logistics Mobility Facility*	NVZR103708	2014	Industrial	Construct a 50,000-ft² Joint Network Operations Center and a 47,000-ft² Logistics/Mobility Facility to support the JCSE mission. Demolition of five buildings (Buildings 89, 848, 861, 863, and 886) for a total of 82,042 ft² (project area of 193,014 ft²). Three of the buildings would remain on the site, Building 79 and 862 and the new Squadron Operations Facility. The headquarters has a leaky roof, asbestos, and lead.	Floodplain	290,014	+14,958
C21. Coalition Village	NVZR033711	2014	Administrative	Construct a facility to permanently house international representatives working directly for and with CENTCOM in support of the global war on terrorism. Remove all CV temporary facilities.	Floodplain, ERP	77,400	+77,400
C22. Mission Support Facility*	NVZR033709	2014	Administrative	Construct a Mission Support Facility, demolish Buildings 373 (27,738 ft²), 1066 (4,000 ft²), and 1070 (864 ft²) (total demolition project area of 94,872 ft²), and minor exterior renovations of Building 27 (construction of a handicap ramp and planter box) to relocate displaced functions.	Potentially eligible buildings	124,871	+29,999

**Table G-7. Other Projects (for Cumulative Impacts Analysis) - Construction**

<b>Project Identification Number and Title</b>	<b>Installation Project Number</b>	<b>FY</b>	<b>Land Use</b>	<b>Description</b>	<b>Potential Constraints</b>	<b>Total Project Area (ft²)</b>	<b>Change in Impervious Surface (ft²)</b>
C23. Construct FAMCAMP Annex	NVZR080003	2015	Outdoor Recreation	Construct 300 full-service RV parking pads and an Activity Center. Upgrade 121 RV parking pads. Construct RV Parking Spaces: Concrete parking pads with attached patios, and sanitary sewer, water, electrical, telephone, and cable TV service. Construct 15,000-ft² Activity Center: Coin-operated laundry, male and female toilets and showers, check-in and registration office, mailroom, recreation room, and food preparation and storage areas.	Wetlands, Floodplain	27,360	+27,360
C24. Dormitory (120-Room)*	NVZR073701	2015	Housing	Construct a 36,753-ft², 120-room dormitory and demolish dormitories 377 (25,350 ft²) and 378 (25,350 ft²) (total demolition project area of 83,555 ft²). Phase 3 of a 5-phase program to replace existing dormitories. A 21,613-ft² parking area would be constructed.	Floodplain	162,000	+7,666
C25. Fuels Management Facility*	NVZR053706	2015	Industrial	Construct a new Fuels Management Facility (8,611 ft²) to replace Building 1062 and renovate the Refueling Vehicle Shop, Building 1061. Building 1062 (3,520 ft²) would be demolished, with a total demolition project area of 22,294 ft².	ERP, Floodplain	30,905	+8,611
C26. Base Civil Engineering Complex*	NVZR073722	2015	Open Space, Administrative	Construct an 86,725-ft² BCE complex. A 234,703-ft² parking area would be constructed. Total construction project area is 704,111 ft². Demolition of 11 facilities (see Project D13) with a total demolition project area of 348,739 ft².	None	1,052,850	+3,317

**Table G-7. Other Projects (for Cumulative Impacts Analysis) - Construction**

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Total Project Area (ft²)	Change in Impervious Surface (ft²)
C27. Construct Wing Headquarters	NVZR083705	2015	Administrative, Industrial	Construct a 25,000-ft² replacement Wing HQ facility for Building 299. Two parking areas totaling 72,000 ft² are proposed to be constructed along the Zemke Avenue Extension.	ERP, Floodplain	Facilities: 25,000 Pavements: 72,000 Site Improvements: 89,390 Total Project Area: 186,390	+97,000
C28. Construct Fuel Containment System, Building 105	NVZR070115	2016	Industrial	Construct concrete containment and curbing under fuel piping and valves outside Building 105 pump room (secondary containment).	Floodplain	3,750	+3,750
C29. DFT - Construct Pavilion, Building 49	NVZR050233	2016	Industrial	Construct a new pavilion to replace the existing one. Estimated DFT manpower is 11 personnel (1,600 man-hours).	Floodplain	300	No change
C30. Munitions Administration Facility	NVZR103711	2016	Industrial	Construct a new administration facility to replace existing Building 825. Facility should be sized to accommodate 17 personnel, be sited in the general location of Building 821 (scheduled for demolition in FY 2011; not analyzed in this IDEA), and comply with the Munitions Facilities Standards Guide.	QD, Floodplain	5,000	+5,000
C31. U.S. Water Operations Building	No project number assigned	2016	Industrial	Construct a new 5,000 ft²-U.S. Water Operations Building across from the WWTP. A 10-space, approximately 1,600-ft² parking area would be constructed.	Wetlands, Floodplain	6,600	+6,600
C32. SOCOM Utility Plant							

Table G-7. Other Projects (for Cumulative Impacts Analysis) - Construction							
Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Total Project Area (ft²)	Change in Impervious Surface (ft²)
C33. Florida Army National Guard Special Operations Detachment							

**Table G-8. Other Projects (for Cumulative Impacts Analysis) - Infrastructure**

<b>Project Identification Number and Title</b>	<b>Installation Project Number</b>	<b>FY</b>	<b>Land Use</b>	<b>Description</b>	<b>Potential Constraints</b>	<b>Total Project Area (ft²)</b>	<b>Change in Impervious Surface (ft²)</b>
I7. Repair FAMCAMP Electrical Distribution System	NVZR100080	2012	Outdoor Recreation	Install new electrical ground transformers and load centers at 86 RV parking with wiring to all pedestals.	Floodplain	3,000	+16
I8. Install HEMP Shelter Generator Fuel Tank, Building 541	NVZR100131	2012	Administrative	Install a 400-gallon diesel fuel tank (AST) at the HEMP shelter, Building 541.	ERP, Floodplain	36	+36
I9. F&I WWTP Effluent Pumping Station	No project number assigned	2012	Industrial	F&I WWTP effluent disposal pumping station to be located adjacent to the existing station, which splits duty among pumping to the golf course and to the effluent disposal areas, thereby allowing the transfer of the entire asset to the Golf Course.	Sensitive species, Floodplain	500	+500

**Table G-8. Other Projects (for Cumulative Impacts Analysis) - Infrastructure**

<b>Project Identification Number and Title</b>	<b>Installation Project Number</b>	<b>FY</b>	<b>Land Use</b>	<b>Description</b>	<b>Potential Constraints</b>	<b>Total Project Area (ft²)</b>	<b>Change in Impervious Surface (ft²)</b>
I10. Gravity Sewer Installation and Repair	No project number assigned	2012	Community, Housing, Industrial, Medical	The gravity collection system in the area north of the installation, upstream of manhole G110A, is highly deficient and is in need of immediate repair. The repair of these components is to include the installation of new lines and lining of existing lines (totaling 5,830 feet), installation of new manholes and lining of others (totaling 35 manholes). The gravity collection system in the area north of Lift Station 21 and the area along Hanger Loop is also in need of immediate repair. The repair of these components includes the installation of new lines and lining of existing lines (total of 5,250 feet), and the installation of new manholes and the lining of others (total of 36 manholes). Reroute the gravity sewer lines around temporary housing in the area of Hanger loop south of manhole C44.	Floodplain, ERP	33,240	No change
I11. Repair Secondary Electrical Distribution	NVZR110044	2013	Community, Industrial, Open Space	Upgrade the secondary electrical distribution system by burying overhead lines and removing poles.	Historic District, Floodplain	6,500	No change

**Table G-8. Other Projects (for Cumulative Impacts Analysis) - Infrastructure**

<b>Project Identification Number and Title</b>	<b>Installation Project Number</b>	<b>FY</b>	<b>Land Use</b>	<b>Description</b>	<b>Potential Constraints</b>	<b>Total Project Area (ft²)</b>	<b>Change in Impervious Surface (ft²)</b>
I12. Replace Cables 25/1180-1079.	No project number assigned	2013	Airfield, Open Space	CS project to replace copper cable that feeds all of the flightline weather and navigation equipment connecting Building 1180 (Air Traffic Control Tower) with Hanger 3 (weather station). Most would be direct-buried throughout the flightline; to run across existing lines. Fiber optic 1180 to 1079 (ITNs) would replace current fiber optic cable 1180-1079. This fiber cable runs from Building 1180 into 540 then to 1079. Building 540 is due for demolition within the next 2 years and if this cable is not replaced, the demolition will disable connectivity between 1180 and 1079. The conduits would likely be installed by directional boring.	Historic District, Sensitive Species, QD, Wetland, Floodplain	19,000	No change
I13. Install Fiber Optic Connectivity between ITN 49 and ITN 1750 (SATCOM)	No project number assigned	2013	Industrial, Open Space	CS project: The existing fiber cable between the ITN in Building 49 (Base Supply) and the ITN in Building 1750 (SATCOM Facility) is saturated. The JCSE is attached off this ITN Bldg 49 and the ITN in Building 40 passes through 49 to reach the ITN in Building 1750.	Floodplain	12,000	No change

**Table G-8. Other Projects (for Cumulative Impacts Analysis) - Infrastructure**

<b>Project Identification Number and Title</b>	<b>Installation Project Number</b>	<b>FY</b>	<b>Land Use</b>	<b>Description</b>	<b>Potential Constraints</b>	<b>Total Project Area (ft²)</b>	<b>Change in Impervious Surface (ft²)</b>
I14. SOF Acquisition Center (Phase II) (SOCOM Parking Garage)	NVZR123709	2013	Administrative	Current parking spaces only support 43 percent of SOCOM's FY12 population. Construct a 204,000-ft², four-story vehicle parking garage within HQ SOCOM compound, with a capacity for at least 600 vehicles. Lightweight roof to be added to existing parking structure (Building 512). Construction of pedestrian walkways, service access areas, and lighting would be included. Parking structure would not be required to be constructed above the 100-year floodplain. One existing, temporary gravel parking area (271 spaces) would be demolished. Existing disturbed areas would be landscaped.	Historic District Viewshed, Floodplain	204,000	+68,000
I15. Repair SOCOM SE Gate Entrance	NVZR100171	2013	Administrative	Alter the southeast entrance to the SOCOM compound to allow two lanes of incoming traffic.	Floodplain, ERP	1,000	+1,000
I16. Install Fire Hydrants, MSA	NVZR050066	2013	Industrial	Install six fire hydrants throughout the MSA.	Floodplain	25,200	No change
I17. Install Vehicle Entry Gate and Concrete Pavement Roadway, Building 105	NVZR070017	2013	Industrial	Construct a paved access road and add a vehicle gate to the southeast side of the Type III hydrant fuel system building, Building 105.	ERP, Floodplain	5,004	+5,004
I18. Repair DFSP Fire Hydrant System; Repair DFSP Overhead Electrical Distribution	NVZR100113, NVZR090109	2013, 2015	Industrial	Upgrade the fire hydrant system serving the DFSP to ensure functionality in the event of an emergency. Remove overhead electrical distribution serving area lighting at the DFSP.	Floodplain	6,500	No change



**Table G-8. Other Projects (for Cumulative Impacts Analysis) - Infrastructure**

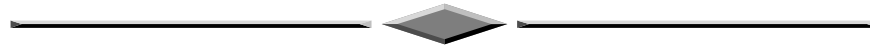
<b>Project Identification Number and Title</b>	<b>Installation Project Number</b>	<b>FY</b>	<b>Land Use</b>	<b>Description</b>	<b>Potential Constraints</b>	<b>Total Project Area (ft²)</b>	<b>Change in Impervious Surface (ft²)</b>
I19. Widen Road to Accommodate Rapidscan GaRDS System; Port Tampa Gate Improvements	NVZR100190, NVZR093706	2013	Industrial, Open Space	Widen the north entry road into the commercial gate area, between the perimeter gate and the pre-screen waiting area, for moving operation of the Rapidscan GaRDS (gamma-ray detection system) truck. Construct a 1,830-ft², traffic-control facility with traffic lanes dedicated to processing entry of POVs to alleviate congestion. Reconfigure roads.	ERP, Floodplain, Wetlands	6,690	5,947
I20. New Constant Run Booster and Automated Chlorine Feed	No project number assigned	2013	Open Space	Install a new CRB and automated chlorine feed system near marine and Golf Course Boulevard to improve water quality on the south installation area.	Floodplain	400	+200
I21. Direct Bury Communication Infrastructure	NVZR120057	2013	Industrial	Excavate a 3-ft-deep trench for direct burial fiber cable from two Air Traffic Control and Landing Systems (ATCOLS) weather stations (Buildings 1201 and 1202) to the Air Traffic Control Tower (Building 1180). The fiber cable would be installed from Buildings 1201 to 1202 along the treeline, if possible, and would branch out to Building 1180 in order to replace the existing copper communications infrastructure.	Floodplain	XX	No change

**Table G-8. Other Projects (for Cumulative Impacts Analysis) - Infrastructure**

<b>Project Identification Number and Title</b>	<b>Installation Project Number</b>	<b>FY</b>	<b>Land Use</b>	<b>Description</b>	<b>Potential Constraints</b>	<b>Total Project Area (ft²)</b>	<b>Change in Impervious Surface (ft²)</b>
I22. Repair Lift Station	NVZR060124	2014	Industrial	Repair Lift Station 1063. Replace piping from lift station to manhole G123 at the intersection of MacDill Avenue and Zemke Avenue. Lift Station 1063 errantly receives storm water in addition to sewage during rain events and is prone to overflow. The main reason for overflow is the restricted force main.	ERP, Floodplain	1,500	No change
I23. Install new Lift Station and Force Main	No project number assigned	2014	Industrial	Install new lift station and force main to permanently remove a portion of flow from Lift Station 22 within SOCOM. New station to be in area near the intersection of Zemke Avenue and South Boundary Boulevard and would receive all flows from the northern section of the installation. To replace project NVZR030240.	ERP, Floodplain	2,000	+2,000
I24. Reestablish Drainage Taxiway G	NVZR100191	2014	Airfield	Clean and reestablish drainage from northeast pavement edge to relieve high spots holding water at South Perimeter Road and Taxiway G shoulder (east side).	Floodplain	1,000	No change
I25. Repair Vince Drainage, Building 565	NVZR100167	2014	Administrative	Regrade the NW exit area of Building 565 as required to prevent water from accumulating.	ERP, Floodplain	3,000	No change
I26. Construct CENTCOM Parking Lot*	NVZR100152	2014	Community Commercial	Construct a new 190,000-ft² parking lot for Buildings 1045 and 1047 CENTOM personnel. Lot to be located north of Building 1045, south of Royal Tern Avenue, and east of Avocet Street.	SWMU 61, Floodplain	XX	+190,000

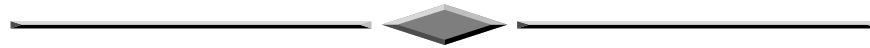
Table G-8. Other Projects (for Cumulative Impacts Analysis) - Infrastructure							
Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Total Project Area (ft²)	Change in Impervious Surface (ft²)
I27. Construct Bike Paths/Lanes	NVZR100032	2015	Housing, Open Space, Administrative, Outdoor Recreation	Construct paved surfaces (1-mile path, 4 feet wide) along various primary routes to encourage bicycle usage and provide separation from vehicle traffic.	Floodplain	21,120	+21,120
I28. Repair Water Distribution System	NVZR090056	2015	Open Space, Community, Administrative	Repair/replace 16- to 20-inch water main from the Dale Mabry gate, along the northern boundary to near MacDill Gate. Repair water line near Building 153.	Airfield	15,675	No change
I29. Replace Cable 16	No project number assigned	2016	Administrative	Install and test copper cable infrastructure from Building P-40 (DCO) to Buildings 143, 149, 151, and 153.	Floodplain	894	No change
I30. Construct SATCOM Parking Lot, Building 1750	NVZR070098	2016	Administrative	Extend the parking area of Building 1750 to add 10 additional parking spaces.	Floodplain	2,952	+2,952

There are no additional projects for the natural infrastructure or sustainability project categories.

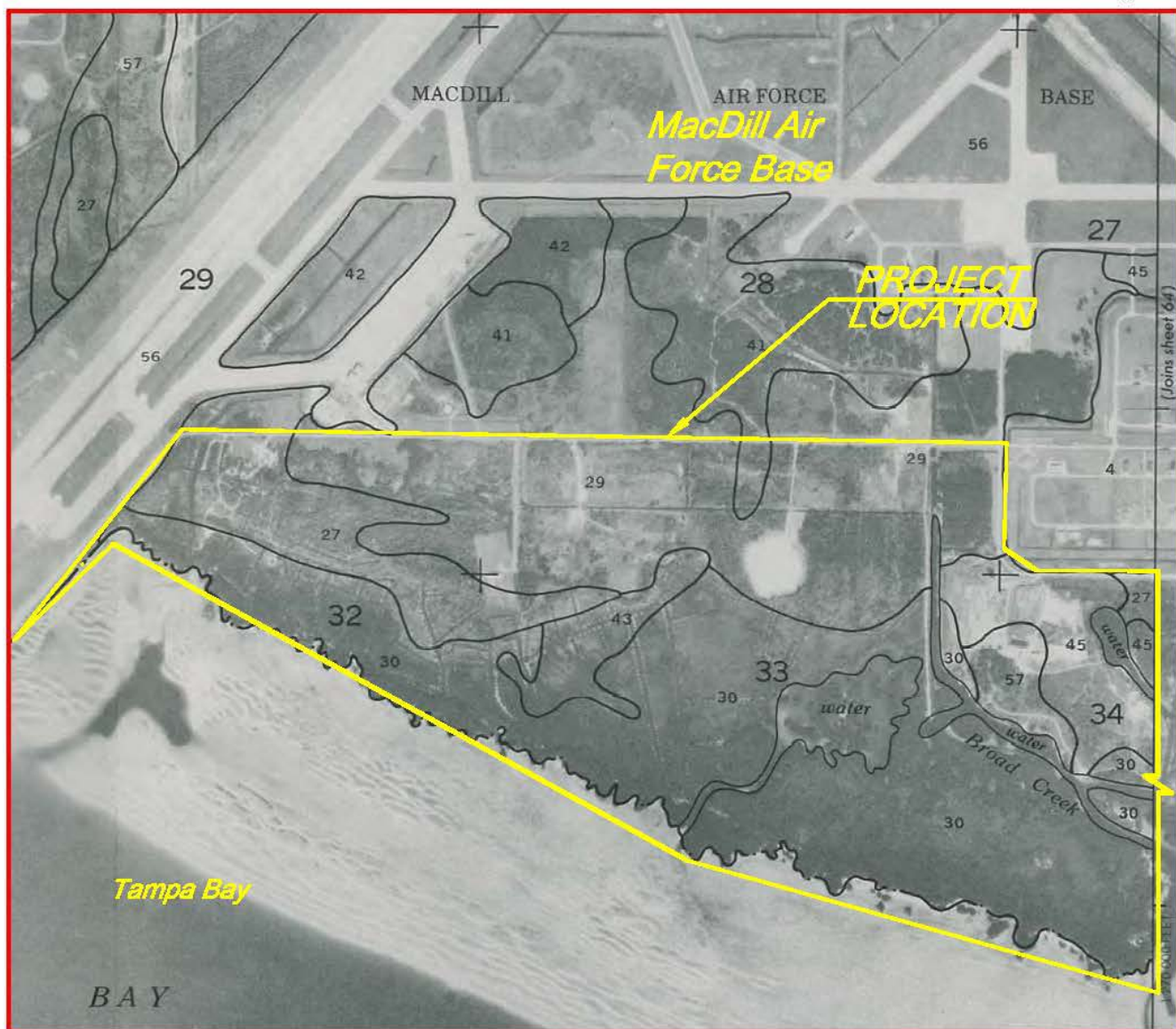
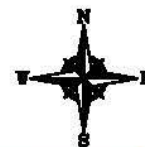


## **APPENDIX H**

### **SOIL SURVEY INFORMATION**







Map taken from U.S.D.A. *Soils of Hillsborough County, FL*

27 - Malabar fine sand

29 - Myakka fine sand

30 - Myakka fine sand, frequently flooded

41 - Pomello fine sand, 0 to 5 percent slopes

43 - Quartzipsamments, nearly level

45 - St. Augustine-Urban land complex

57 - Wabasso fine sand

0 mi 0.5 mi

## MacDill AFB Ecosystem Restoration Conceptual Masterplan

S-32, T-30S, R-18E  
Hillsborough County  
Scale: SEE BAR SCALES



ASH ENGINEERING, INC.  
4802 Eisenhower Blvd, Suite 380  
Tampa, FL 33634-6923 CA#6603  
813.290.8899 Fax: 813.290.8881  
[www.ashengineering.com](http://www.ashengineering.com)

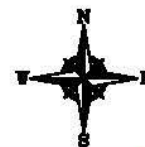
U.S. Soils Conservation  
Service Map  
Western Portion

Prj# 05129C

Figure B.1

**This page intentionally left blank.**





Map taken from U.S.D.A. *Soils of Hillsborough County, FL*

- 27 - Malabar fine sand
- 30 - Myakka fine sand, frequently flooded
- 34 - Ona-Urban land complex
- 44 - St. Augustine fine sand
- 45 - St. Augustine-Urban land complex
- 58 - Wabasso-Urban land complex

0 mi 0.5 mi

## MacDill AFB Ecosystem Restoration Conceptual Masterplan

S-32, T-30S, R-18E  
Hillsborough County  
Scale: SEE BAR SCALES



ASH ENGINEERING, INC.  
4802 Eleonora Blvd, Suite 380  
Tampa, FL 33634-6523 CA#6603  
813.290.8899 Fax: 813.290.8881  
[www.ashengineering.com](http://www.ashengineering.com)

U.S. Soils Conservation  
Service Map  
Eastern Portion

Prj# 05129C

Figure B.2



**This page intentionally left blank.**

# Soils Descriptions

## **Malabar Series**

The Malabar series consists of very deep, poorly to very poorly drained soils in sloughs, shallow depressions, and along flood plains. They formed in sandy and loamy marine sediments. Near the type location, the mean annual temperature is about 73 degrees F., and the mean annual precipitation is about 55 inches. Slopes range from 0 to 2 percent.

**Range in Characteristics:** Thickness of the solum ranges from 46 to 90 inches. Soil reaction ranges from strongly acid to moderately alkaline throughout.

**Geographic Setting:** Malabar soils are in sloughs, depressions, and along flood plains. Slopes range from 0 to 2 percent. They formed in thick beds of sandy and loamy marine sediments. The average annual temperature ranges from 72 to 74 degrees F. and the average annual precipitation ranges from 53 to 57 inches.

**Drainage and Permeability:** poorly and very poorly drained; rapid permeability in the A, E, Bw and Cg, horizons, and slow to very slow permeability in the Btg horizon.

**Use and Vegetation:** Large areas of the Malabar soils are used extensively for range. Some areas are used for citrus crops, truck crops, and improved pasture with adequate water control. Native vegetation consists of scattered slash pine, cypress, wax myrtle, cabbage palm, pineland threawn, and maidencane. In depressions, the vegetation is dominantly St. Johnswort or maidencane.

**Remarks:** The water table is within depths of 10 inches for 2 to 6 months during most years. Depressions are ponded for periods ranging from 3 to 6 months in most years. Flood plains are flooded for periods of 7 days to 1 month in most years.

## **Myakka Series**

The Myakka series consists of deep and very deep, poorly to very poorly drained soils formed in sandy marine deposits. These soils are on flatwoods, high tidal areas, flood plains, depressions, and gently sloping to sloping barrier islands. They have rapid permeability in the A horizon and moderate or moderately rapid permeability in the Bh horizon. Slopes range from 0 to 8 percent.

**Range in Characteristics:** Solum thickness is more than 30 inches. Reaction commonly ranges from extremely acid to slightly acid. In tidal, limestone substratum, and shelly substratum phases reaction ranges up to moderately alkaline.

**Geographic Setting:** Myakka soils occur on nearly level high tidal, flatwoods, flood plains, and depressional areas and gently sloping to sloping barrier islands with gradients of 0 to 8 percent. The soil formed in sandy marine deposits. Rainfall averages about 50 to 60 inches annually with mean annual air temperature of about 70 to 74 degrees F.

**Drainage and Permeability:** Myakka soils are poorly to very poorly drained. They have slow internal drainage and slow to ponded runoff. Permeability is rapid in the A and E horizons and moderate or moderately rapid in the Bh horizon. The water table is at depths of less than 18 inches for 1 to 4 months duration in most years and recedes to depths of more than 40 inches

during very dry seasons. Depressional areas are covered with standing water for periods of 6 to 9 months or more in most years.

**Use and Vegetation:** Most areas are used for commercial forest production or native range. Large areas with adequate water control measures are used for citrus, improved pasture, and truck crops. Native vegetation includes longleaf and slash pines with an undergrowth of saw palmetto, running oak, inkberry, wax myrtle, huckleberry, chalky bluestem, pineland threeawn, and scattered fetterbush.

### **Pomello Series**

The Pomello series consists of very deep, moderately well to somewhat poorly drained soils that are sandy to depths of more than 80 inches. Pomello soils formed in sandy marine sediments in the flatwoods areas of Peninsular Florida. Slopes range from 0 to 5 percent.

**Range in Characteristics:** Solum thickness is 40 inches or more. The soil is sand, fine sand, or coarse sand to 80 or more inches. Reaction ranges from very strongly acid to moderately acid.

**Geographic Setting:** Pomello soils are on ridges within the flatwoods in Peninsular Florida. Slopes range from 0 to 5 percent. Precipitation averages 50 to 60 inches, and average air temperature is 70 to 74 degrees F.

**Drainage and Permeability:** Moderately well and somewhat poorly drained. Moderately rapid permeability. The seasonally high water table is at depths of about 24 to 42 inches for 1 to 4 months.

**Use and Vegetation:** Pomello soils are mostly used for range and forest production. A few areas are used for pasture. In its northern extent of occurrence many areas are used for urban development. Native vegetation is dominated by scrub oak, dwarf live oak, saw palmetto, longleaf pine, slash pine, and pineland threeawn.

### **St. Augustine Series**

The St. Augustine series consists of very deep, somewhat poorly drained, moderately rapid to very slowly permeable soils on broad to narrow flats and slight ridges and knolls bordering tidal marshes and estuaries of Peninsular Florida. They formed in fill material. The fill is the result of dredging and filling operations along peninsular Florida. They are composed of sandy materials containing loamy or clayey fragments and fragments of shell. Near the type location, the mean annual temperature is about 72 degrees F., and the mean annual precipitation is about 55 inches. Slopes are 0 to 5 percent.

**Range in Characteristics:** Soil reaction ranges from slightly acid to moderately alkaline in all horizons. Thickness of the fill material ranges from 20 to more than 80 inches. Fragments of shell are calcareous and range mostly from sand size to 6 cm in diameter. Shell content ranges from less than 5 to 70 percent, by volume. Weighted average shell content (2 mm or larger) in the control section is less than 20 percent. Fragments of shell are stratified in some pedons. Depth to the loamy or clayey bodies is less than 40 inches. Base saturation of these bodies is more than 35 percent. Underlying material is generally sandy but some pedons have silty clay loam, clay, or sandy clay Ab and Cb horizons at depths of more than 40 inches.

**Geographic Setting:** St. Augustine soils are on broad to narrow flats and slight ridges and knolls bordering tidal marshes and estuaries near the coast of Peninsular Florida. Slopes are dominantly 0 to 5 percent. These soils consist of moderately thick to thick deposits of sandy materials mixed with marine shell fragments and bodies of loamy and clayey materials. They have been dredged or dug, transported and redeposited as a layer of fill, mostly in tidal marsh areas. Near the type location, the average annual precipitation ranges from 52 to 58 inches and the mean annual temperature ranges from 72 to 73 degrees F.

**Drainage and Permeability:** Somewhat poorly drained. Moderately rapid or rapid permeability except in pedons with clayey horizons below 40 inches which have very slow permeability.

**Use and Vegetation:** Most areas of these soils are used for urban development. Some areas have natural vegetation of southern red cedar and cabbage palm with an understory or wax myrtle, blackberry, greenbrier, and panicums.

**Remarks:** The water table is at depths of 20 to 30 inches for 2 to 6 months in most years. It rises above a depth of 20 inches briefly during periods of high rainfall. It recedes to more than 50 inches during long dry periods. These soils are subject to flooding for very brief periods during hurricanes.

### **Wabasso Series**

The Wabasso series consists of deep or very deep, very poorly and poorly drained, very slowly and slowly permeable soils on flatwoods, flood plains, and depressions in Peninsula Florida. They formed in sandy and loamy marine sediments. Near the type location, the mean annual temperature is about 72 degrees F., and the mean annual precipitation is about 55 inches. Slopes range from 0 to 2 percent.

**Range in Characteristics:** Reaction ranges from extremely acid to slightly acid in the A, E, and Bh horizons, from very strongly acid to moderately alkaline in the E and Btg horizons, and from slightly alkaline to moderately alkaline in the Cg horizon. Total thickness of the A and E horizons is less than 30 inches. Depth to the Bt horizon is less than 37 inches.

**Geographic Setting:** Wabasso soils are on flatwoods areas and flood plains. Slopes range from 0 to 2 percent. They formed in sandy marine sediments over loamy materials. The climate is humid subtropical. The average annual precipitation ranges from 50 to 60 inches and the average annual temperature ranges from 70 to 74 degrees F.

**Drainage and Permeability:** Poorly and very poorly drained; rapidly permeable in the A and E horizons and slowly to very slowly permeable in the Bh and Bt horizons.

**Use and Vegetation:** Most areas of Wabasso soils are in natural vegetation and are used for native range. Areas with adequate water control measures are used for citrus, truck crops, and tame pasture. The natural vegetation consists of longleaf pine, slash pine, cabbage palm, live oak, with an understory of saw palmetto, laurel oak, wax myrtle, chalky bluestem, and pineland threeawn.

**Remarks:** The water table is at depths of 12 to 40 inches for more than 6 months in most years. It is at depths of less than 12 inches for less than 60 days in wet seasons and is at depths of more than 40 inches during very dry seasons. Depressions are ponded for periods of 6 to 9 months in most years.

### **Ona Series**

The Ona series consists of poorly drained, moderately permeable soils that formed in thick sandy marine sediments. They are in the flatwood areas of central and southern Florida. Slopes range from 0 to 2 percent.

**Range in Characteristics:** Soil reaction ranges from extremely acid to medium acid in all horizons. Texture is sand or fine sand in all horizons except the Bh horizon which includes loamy sand or loamy fine sand.

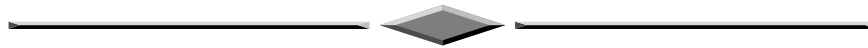
**Geographic Setting:** Ona soils are on coastal flatwoods. Slopes range from 0 to 2 percent. The regolith is sandy marine sediments. Average annual precipitation is 55 inches, and average annual air temperature is 73 degrees F. or more near the type location.

**Drainage and Permeability:** Ona soils are poorly drained. Permeability of the Bh horizon is moderate. Runoff is slow and internal drainage is impeded by the water table. The water table is at depths of 10 to 40 inches for periods of 4 to 6 months during most years. It rises to depths of less than 10 inches for periods of 1 to 2 months, and may recede to depths of more than 40 inches during very dry seasons.

1.1

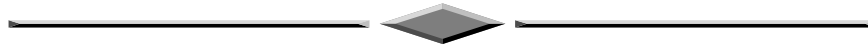
**Use and Vegetation:** Much of the soil is used for growing truck crops, citrus, and improved pasture. Natural vegetation is slash pine and longleaf pine, gallberry, widely spaced saw palmettos, huckleberry, and pineland threeawn. A small part remains in forest and range.

**Remarks:** Aquic moisture regime: Gray colors and water table up to near the surface of the soil.



## APPENDIX I

### AIR QUALITY CALCULATIONS





## Wetland Restoration Project Project Summary

Includes:

1 Average of 27.1 acres per year of disturbance from restoration **945,252** ft<sup>2</sup> 21.7 acres /yr

Assumptions:

All land disturbance/grading area includes building construction, utility installation, landscaping, and paving operations.

Total Building Construction Area: 0 ft<sup>2</sup>  
Total Demolished Area: 945,252 ft<sup>2</sup>  
Total Paved Area: 0 ft<sup>2</sup>

If project includes any demolition, include here

Total Disturbed Area: **945,252** ft<sup>2</sup>  
Construction Duration: 0.5 year(s)  
Paving Duration: 0.0 months  
Annual Construction Activity: 115 days/yr

Total Disturbed Area is usually larger than the building being demolished unless the facility demolished is multi-story. If larger, do not use the sum from above, replace with your own value in cell "C14".

If construction duration is less than a year, change the value.

Project Proposed for CY 2012

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Combustion Emissions (tpy)	17.56	1.04	6.94	0.35	1.06	1.03
Fugitive Dust Emissions (tpy)	0.00	0.00	0.00	0.00	12.37	1.24
<b>Total Project Emissions (tpy)</b>	<b>17.558</b>	<b>1.045</b>	<b>6.940</b>	<b>0.351</b>	<b>13.432</b>	<b>2.268</b>
Hillsborough County Emissions (tpy)	56,368	35,785	200,190	19,084	89,400	89,400
Project Percentage (%)	0.0311%	0.00292%	0.00347%	0.001840%	0.0150%	0.0025%
<b>Regionally Significant? (more than 10%)</b>	<b>no</b>	<b>no</b>	<b>no</b>	<b>no</b>	<b>no</b>	<b>no</b>



## Combustion Emissions

### Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0

Emission factors are taken from the NONROAD model and were provided to e2M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.

Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

#### Grading

Equipment	No. Req <sup>d</sup> <sup>a</sup> per 10 acres	NO <sub>x</sub> (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64
Total per 10 acres of activity	2	23.29	1.68	8.71	0.47	1.55	1.50

#### Demolition

Equipment	No. Req <sup>d</sup> <sup>a</sup> per 10 acres	NO <sub>x</sub> (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Total per 10 acres of activity	2	31.81	1.89	12.58	0.64	1.92	1.87

- The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.
- The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO<sub>2</sub> emissions by more than a factor of two.
- Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

# PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)					
		NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>
Grading Equipment	2	46.571	3.366	17.411	0.931	3.099	3.006
Paving Equipment	1	0.000	0.000	0.000	0.000	0.000	0.000
Demolition Equipment	2	63.615	3.771	25.168	1.272	3.846	3.731
Building Construction	1	0.000	0.000	0.000	0.000	0.000	0.000
Air Compressor for Architectural Coating	1	0.000	0.000	0.000	0.000	0.000	0.000
Architectural Coating**			0.000				

\*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

\*\*Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NO<sub>x</sub> = (Total Grading NO<sub>x</sub> per 10 acre)\*(Equipment Multiplier)

## Summary of Input Parameters

	Total Area (ft <sup>2</sup> )	Total Area (acres)	Total Days
Grading:	945,252	21.70	13
Paving:	0	0.00	0
Demolition:	945,252	21.70	543
Building Construction:	0	0.00	0
Architectural Coating	0	0.00	0

(from "GRADING" below)

(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Grading Equipment	605.42	43.76	226.34	12.11	40.29	39.08
Paving	-	-	-	-	-	-
Demolition	34,511.22	2,045.79	13,653.39	690.22	2,086.66	2,024.06
Building Construction	-	-	-	-	-	-
Architectural Coatings	-	-	-	-	-	-
Total Emissions (lbs):	35,116.64	2,089.55	13,879.73	702.33	2,126.95	2,063.14

Results: Total Project Annual Emission Rates

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Total Project Combustion Emissions (lbs)	35,116.64	2,089.55	13,879.73	702.33	2,126.95	2,063.14
Total Project Combustion Emissions (tons)	17.5583	1.0448	6.9399	0.3512	1.0635	1.0316

## Construction Fugitive Dust Emissions

### Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19	ton PM <sub>10</sub> /acre-month	MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42	ton PM <sub>10</sub> /acre-month	MRI 1996; EPA 2001; EPA 2006

### PM<sub>2.5</sub> Emissions

PM <sub>2.5</sub> Multiplier (10% of PM <sub>10</sub> emissions assumed to be PM <sub>2.5</sub> )	0.10	EPA 2001; EPA 2006
---	------	--------------------

### Control Efficiency

(assume 50% control efficiency for PM <sub>10</sub> and PM <sub>2.5</sub> emissions)	0.50	EPA 2001; EPA 2006
--	------	--------------------

### Project Assumptions

#### New Roadway Construction (0.42 ton PM<sub>10</sub>/acre-month)

Duration of Construction Project - months

Area - acres

#### General Construction Activities (0.19 ton PM<sub>10</sub>/acre-month)

Duration of Construction Project 6 months

Area 21.7 acres

	Project Emissions (tons/year)			
	PM <sub>10</sub> uncontrolled	PM <sub>10</sub> controlled	PM <sub>2.5</sub> uncontrolled	PM <sub>2.5</sub> controlled
New Roadway Construction	0.00	0.00	0.00	0.00
General Construction Activities	24.74	12.37	1.24	0.62
<b>Total</b>	<b>24.74</b>	<b>12.37</b>	<b>1.24</b>	<b>0.62</b>

## Construction Fugitive Dust Emission Factors

### General Construction Activities Emission Factor

**0.19 ton PM<sub>10</sub>/acre-month**

Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM<sub>10</sub>/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM<sub>10</sub>/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM<sub>10</sub>/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM<sub>10</sub>/acre-month) and 75% of the average emission factor (0.11 ton PM<sub>10</sub>/acre-month). The 0.19 ton PM<sub>10</sub>/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM<sub>10</sub>/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particulate (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District as well as the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM<sub>10</sub> and PM<sub>2.5</sub> in PM nonattainment areas.

### New Road Construction Emission Factor

**0.42 ton PM<sub>10</sub>/acre-month**

Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM<sub>10</sub>/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM<sub>10</sub>/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

### PM<sub>2.5</sub> Multiplier

**0.10**

PM<sub>2.5</sub> emissions are estimated by applying a particle size multiplier of 0.10 to PM<sub>10</sub> emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

### Control Efficiency for PM<sub>10</sub> and PM<sub>2.5</sub>

**0.50**

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM<sub>10</sub> and PM<sub>2.5</sub> in PM nonattainment areas (EPA 2006). Wetting controls will be applied during project construction.

### References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

## Construction (Grading) Schedule

Estimate of time required to grade a specified area.

### Input Parameters

Construction area:

**Qty Equipment:**

21.70 acres/yr (from "COMBUSTION" above)

**3.00** (calculated based on 3 pieces of equipment for every 10 acres)

### Assumptions

Terrain is mostly flat.

An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.

200 hp bulldozers are used for site clearing.

300 hp bulldozers are used for stripping, excavation, and backfill.

Vibratory drum rollers are used for compacting.

Stripping, Excavation, Backfill and Compaction require an average of two passes each.

Excavation and Backfill are assumed to involve only half of the site.

### Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/y r (project- specific )	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	21.70	2.71
2230 500 0300	Stripping	Topsoil & stockpiling, adverse s	1,650	cu. yd/day	2.05	0.49	21.70	10.61
2315 432 5220	Excavation	Bulk, open site, common earth,	800	cu. yd/day	0.99	1.01	10.85	10.94
2315 120 5220	Backfill	Structural, common earth, 150'	1,950	cu. yd/day	2.42	0.41	10.85	4.49
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passe	2,300	cu. yd/day	2.85	0.35	21.70	7.61
TOTAL								36.36

### Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 36.36  
 Qty Equipment: 3.00  
**Grading days/yr: 12.12**